
STUDIES
ON
POPULATION, HEALTH, NUTRITION, FOOD AND
AGRICULTURE, EDUCATION, SOCIAL WELFARE
AND MANPOWER

and

REPORT

on

***Planning For the Needs of Children and
Youth in National Development***

THAILAND

1964



CORRECTIONS

Page	Line	Errata	Correction
Forward	16	for by	for use by
30	6 from bottom	per 1,00,000	per 100,000
32	5 from bottom	ratio's	ratios
43	14	1,000/LIVE	1,000 LIVE
44	12	100,000/POPULATION	100,000 POPULATION
48	6 from bottom	deatas	deaths
72	15	vatues	values
	7 from bottom	cources	course
80	9	matenral	maternal
	10	Physician—Hospital-	Physician—Population
86	12	in troducing	introducing
134	16	3.893 million	3,893 million
138	1	PRODUTION	PRODUCTION
144	9	1.000 tons	1,000 tons
157	7	on	no
	4 from bottom	samee xtent	same extent
159	8 from bottom	growing popularity	growing in popularity
	7 from bottom	steadily	steadily
198	3 from bottom	5,3663*	53,663*
199	23	diploms	diploma
201	4 from bottom	compartion	comparison
220	4 from bottom	afroementioned	aforementioned
223	3 from bottom	expensem	expenses
224	last line	Assement	Assessment
232	5,	kinder garten	kindergarten
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	20	1965	165
236	13 from bottom	19591—962	1959—1962
238	5	theire	their
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248	4	there are at least	of
	6	who have	there are many children who have
	6	coutries	countries
250	4 from bottom	163,343,610	163,543,610
251	7	mother's	mothers
254	last line	111,000	1:10,000
262	8	to the homes	to the schools
	27	conclusiors	conclusions
265	15	which	with
268	22	in struction	instruction
274	14 from bottom	Ame ican	American
	5 from bottom	in 1954	in 1952

Page	Line	Errata	Correction
275	12	estabilshed	established
	last line	surxey	survey
276	1	problems	problem
	4	DEPENDET	DEPENDENT
	3 from bottom	1664	1964
277	8	8000 persons	2,000 persons
279	13 from bottom	BEHAVIOUR	BEHAVIOR
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280	9	tried tried	tried
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282	2 from bottom	1961	1961, National Research Council
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291	7	moro	more
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	22	specialties-mechanics	specialties—mechanics
292	3	in 1951	in 1961
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311	7	vear	year
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320	16	1971-1980. inclusive,	1971-1980, inclusive.
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333	2	manpnwer	manpower
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353	9	ara	are
364	24	annually-results	annually—results
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FOREWARD

The National Center for Youth Studies has entrusted me with the task of collecting and analysing data about the needs of children and youth in planning for national development. The purpose of this undertaking was to provide information about Thailand's experience in this respect for presentation to an international conference on the topic "The Needs of Children and Youth in Planning for National Development" to be held at Santhitham Hall, Bangkok, Thailand, from September 13th to 24th 1965. The conference will be sponsored by UNICEF, ECAFE, and the ASIAN INSTITUTE OF ECONOMIC DEVELOPMENT AND PLANNING, with the assistance of ILO, FAO, UNESCO, and WHO.

In order to accomplish this project I have enlisted the assistance of eighteen instructors from the Teacher Training Department. The data were organized into seven units for the purposes of analysis and presentation. These units are about population trends, health, nutrition, food and agriculture, education, social welfare, and economic and manpower. The work was completed in the course of some eight months, and amounted to approximately 1,300 typewritten pages. From this total production, a report was prepared for by the conference delegates.

Although the primary purpose of compiling the information which is presented here was to provide the conference with a report, it was recognized that the material could serve other purposes as well. I believe it will be useful to all who are directly concerned with the needs of children and youth in Thailand, whether this interest stems from involvement with children's needs in an official capacity or is the concern of interested laymen.

Many experts from various government offices were helpful in providing information or in offering criticism and suggestions. I appreciate their efforts, and at the same time call attention to the fact that whatever errors or omissions remain in the finished product should not detract from the usefulness of their contribution, but instead are the responsibility of the authors of the report. I wish to thank all of those whose efforts have resulted in the successful completion of this work.



(B. Attagara)
Director-General
Department of Teacher Training
September, 1965.

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PREFACE

This series of reports covers seven topics: (1) Population Trends, (2) Health, (3) Nutrition, (4) Food and Agriculture, (5) Education, (6) Child Welfare, and (7) Economic and Manpower. The purpose of this project is to assess the needs of children and youth (up to 19 years of age) in Thailand. I am honored to be appointed by the National Center for Youth Studies, the National Research Council, to direct this study which will be presented to UNICEF as requested.

This study has been completed by a group of instructors from the Teacher Training Department. They have received cooperative assistance in the form of verification and advice from the National Statistical Office, the Ministry of Public Welfare, and the Office of the National Economic Development Board.

The instructors responsible for these reports are:

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Mr. Thue Rasmussen	

The English version is translated from the original Thai copies by the aforementioned writers, with the assistance of Miss Leonora Krimball and Miss Wendy Patterson.

I would like to express my sincere thanks to all who helped in completing this series of reports. I hope that this material will be useful to those who are interested, and to the concerned agencies.

B. Attagara.

(Bhunithin Attagara)

Director-Général, Teacher Training Department

Director of Research

The Needs of Children in Thailand

December 20, 1964.

1. STUDY ON POPULATION.

INTRODUCTION

Demographic statistics are indispensable for the detailed study of the needs of children and youths (ages 0-19). What are required here are the data from previous population censuses, the past and present trends, and reliable population projections for the future. Planning on a national scale to meet the needs of children, such as planning in the fields of nutrition, education, health services and social welfare, requires the above-mentioned data which form the bases of all possible projects or schemes. Classification of the data into different agegroups is useful, as some plans may concern only one or two agegroups. For example, educational plans would require detailed data of the population whose ages are between 5 and 19.

Unfortunately, the vital statistics of Thailand may be inaccurate. The figures may be somewhat less than what they should actually be, because some people fail to report the births and deaths of members of their families. Nevertheless, the vital statistics shown here will be useful for studying *the trend* of population increase.

It is felt that the population of Thailand recently has been increasing too rapidly at an average rate of 3% per annum. Although this rate of increase is commonplace in the under-developed countries of Asia, it is regarded as high in comparison with those of fully developed countries.

Another related topic which attracts the interest of many planning experts is the influx of rural people into urban areas. There are both advantages and disadvantages—the advantages are the acceleration of the economic growth and educational expansion, while the disadvantages are the resulting dislocations, unfulfilled hopes and expectations, and on the whole it affects the social and cultural structure of the greater part of the country.

Estimates of the future urban and rural labor force (from now up to 1980) are also included in this report.

The data in this report are taken from the publications of the governmental and municipal departments concerned, and special mention should be made of the material from the National Statistical Office. When it is necessary to compare Thailand's data with those of other countries, figures are quoted from the *United Nation's Demographic Yearbook, 1962*. The population projections are taken from the paper read at the National Seminar on the Population of Thailand, held by the National Research Council in March, 1963.

1. GENERAL FEATURES OF THE PRESENT THAI POPULATION

1.1 The approximate size of the current population and the average size of a household.

According to the latest census (1960), the total population of Thailand was then 26,257,916 and the number of households was 4,616,654.¹ On the average there were 5.68 members in a household. Using the average rate of increase (3% per annum), it was estimated that in 1963 the population of Thailand was 28,835,000. It can be assumed that the average size of a household does not change very much.

1.2 Occupations

The one dominating occupation is agriculture. According to the 1960 census, the total number of people over 11 years of age who are economically active was 13,772,104. The distribution of these people in various occupations is shown in the following tabulation:

Occupation	Number	Percentage
Agriculture	11,332,489	82.3
Skilled trades and industries	806,205	5.9
Commerce	735,457	5.3
Professions and Government service	200,151	1.5
Other occupations	697,802	5.0
Total	<u>13,772,104</u>	<u>100.0</u>

Source: *Statistical Yearbook, Thailand*, No. 24, 1963, National Statistical Office, Thailand, p. 62-63.

Out of the 4,616,654 households, the number of agricultural household is 3,410,309—or 73.9% of the total. This shows that agriculture is undoubtedly the main occupation. The size of the agricultural household is 5.74 persons per household, which is slightly bigger than the national average. People engaged in commerce and in industrial production are the only other noticeable groups, but they account for only 5.3% and 5.9% respectively of the total number of people who are economically active. It is expected that commercial activities will expand rapidly as the national development programs progress. Craftsmen and skilled

¹*Statistical Yearbook, Thailand*, No. 24, 1963, National Statistical Office, Thailand, p. 42.

laborers will be very much in demand in the near future as a result of these development programs. But the supply of skilled labor will be limited because of the rather low standard of education of the majority of the population.

1.3 The current standard of education.

According to the 1960 census,² the percentage of literacy for people over 10 years of age is 70.8%. Although the percentage of literacy is high, only few people have a chance of receiving higher education. The percentage of people over 25 years of age who attained the different levels of education are as follows.

Grades 1-4	45.7 %
Grades 5-10	4.4 %
Grades 11-12 and others	2.5 %

In view of these figures, it must be concluded that the standard of education of the majority of the population is somewhat low and there will be difficulty in finding the large number of people with adequate technical knowledge who are needed for implementing the vast development programs already begun.

²*Ibid.*, pp. 61 and 66.

2. POPULATION TREND IN THE PAST

2.1 Census figures.

The first census of Thailand was made in 1911; the subsequent ones were at intervals of 8–10 years, and the latest one took place in 1960. Table 1 shows these census figures together with the (geometric) rates of increase during intercensal years. The post-war average rate of increase was found to be approximately 3 % per annum.

TABLE 1. CENSUS FIGURES.

Census Year	Total Population	Increase	Rate of increase % per annum
1911	8,266,408	—	—
1919	9,207,355	940,947	1.4
1929	11,506,207	2,298,852	2.2
1937	14,464,105	2,957,898	3.0
1947	17,442,689	2,978,584	1.9
1960	26,257,916	8,815,227	3.2

Source: *National Seminar on the Population of Thailand, March 1963*, National Research Council, Thailand, p. 99.

2.2 Population density.

The Kingdom of Thailand has an area of 514,000 square kilometers, and a current population of over 26 million. The population density of Thailand is thus at least 51 people per sq. km. In Thailand the population density is higher in the central part than in the rest of the country.

The geographical distribution of the Thai population³ is shown as follows:

Central Region	80	per sq. km.
Northeastern Region	53	" "
Northern Region	34	" "
Southern Region	47	" "

The population density of Thailand is on much the same level as those of other countries in Asia, except India and Japan. The densities of the Asian countries are generally lower than those of European countries, as seen from Table 2.

³*Ibid.*, pp. 42-45.

TABLE 2. COMPARISON OF THE POPULATION DENSITIES OF VARIOUS COUNTRIES.

Country	Population density Persons per sq. km.
Thailand	51 (1960)
Malaysia	54 (1957)
Philippines	96 (1960)
India	138 (1961)
Japan	254 (1960)
West Germany	217 (1961)
France	83 (1962)
United Kingdom	217 (1961)

Source: *Demographic Yearbook, 1962*, U.N., New York, pp. 113-115.

Table 2 indicates that a high population density does not necessarily determine the standard of living of the majority of the people, for the United Kingdom, West Germany, and Japan all have comparatively high standards of living though these three countries have high population densities. What is likely to lower the standard of living is a rapid population increase such as described in section 2.3.

2.3 Comparative rates of population increase of various countries.

Not only are the populations increasing throughout Asia, but the rates of increase themselves are also increasing.⁴ In many cases, the rates of population increase are so high that they outbalance the gains of the economic growth. This is what makes it so difficult for Asian countries to raise their standard of living. Now-a-days it is believed that a low rate of population increase helps to achieve a high standard of living, while a persistently high rate of population increase hinders economic development. Thailand's present rate of increase (3 % per annum), is commonplace in Southeast Asia, but it is regarded as high in comparison with those of Europe. Table 3 summarizes these points.

2.4 Population and international migration

The two main causes of population increase are :

1. natural increases (excess of births over deaths) and
2. increases due to immigration.

⁴Sicault, G., *The Needs of Children*, Free Press of Glencoe, Illinois, p. 15.

TABLE 3. COMPARATIVE RATES OF POPULATION INCREASE.

Country	Rate of population increase % per annum
Thailand	3.2 (1960)
India	2.3 (1961)
Indonesia	2.3 (1961)
Malaysia	3.2 (1957)
Philippines	3.3 (1960)
India	2.2 (1961)
Japan	0.9 (1960)
West Germany	1.2 (1961)
France	1.0 (1962)
United Kingdom	0.7 (1961)

Source: *Demographic Yearbook, 1962*, U.N., New York, pp. 114-119.

For Thailand, the increase due to immigration is negligible (See Table 4). The number of permanent immigrants admitted is only about 1,400 each year. The term "permanent immigrants" means those who are granted a permit for a permanent stay. In Table 4 the figures in the two columns "Permanent immigrants" and "Excess of arrivals over departures" are independent of each other. For example, in 1960 there were more people going out than coming in, but there were still 1869 people granted a permit for permanent stay because some of them came into Thailand in previous years, but the permits to stay were not granted until 1960. The excess of arrivals over departures indicates roughly the number of temporary visitors such as tourists, diplomatic staff, business men, and the international personnel working under the technical cooperation schemes. This excess is, on the average, about 22,000.

In short, the number of people coming into Thailand from abroad is negligibly small in comparison with the total population. The number of permanent immigrants is smaller still. France, a country of approximately the same size as Thailand, absorbs a much greater number of immigrants than Thailand. Thailand's immigration figures compared with those of France are shown in Table 4.

2.5 Vital statistics.

As Thailand's population increase is mainly a natural increase, the best way to obtain some insight into the increase is to have a closer look at the vital statistics for the continuous period from 1938 to 1962. In comparing the pre-war (1938-

TABLE 4. POPULATION CHANGE DUE TO INTERNATIONAL MIGRATION.

Year	THAILAND		FRANCE Permanent Immigrants
	Permanent Immigrants	Excess of Arrivals over Departures	
1954	1,556	10,224	—
1955	1,288	25,786	—
1956	1,140	- 1,783	156,897
1957	1,566	13,688	196,641
1958	1,447	60,246	143,352
1959	1,136	28,355	127,310
1960	1,869	- 112	137,879
1961	1,079	28,046	234,167
1962	1,449	87	—

Source: *Statistical Yearbook, 1963*, National Statistical Office, Thailand, pp. 88, 91 and *Demographic Yearbook, 1962*, U.N., New York, p. 123.

1948) figures of fertility and mortality with the recent figures (1958-1962), it is found that the fertility has increased from approximately 500,000 to 900,000 per year, while the mortality has remained constant, i.e. about 200,000 per year. Infant mortality has also remained constant, i.e., about 40,000 per year, despite the increase of the total number of births. The published figures here may be much smaller than the actual figures, as they are grossly under-reported. (See *An Attempt to Appraise the Accuracy of the Demographic Statistics for an Under-developed Country : THAILAND*, by Jean Bourgeois-Pichat, E/CN.9/CONF. 2/L.13, U.N., New York). Although the number of births and deaths may be under-reported, the available vital statistics may indicate the trend of the increase. As the decrease in infant mortality also contributes to the natural increase of the population, it also is included in the Table of Vital Statistics. But it should be pointed out that apart from the actual increase in the number of births, better registration in recent years also contributes to the increase, and so it is difficult to establish a definite trend from these figures. The same remark may be applied to the figures of mortality and infant mortality. The vital statistics are shown in Table 5.

2.6 Comparative birth rates of various countries.

As the birth rate of a country is closely correlated with its rate of population increase, it is of interest to study the comparative birth rates of various countries so as to judge whether Thailand's present birth rate (45 per thousand) is too

TABLE 5. VITAL STATISTICS OF THAILAND.

Year	Fertility	Mortality	Natural Increase	Infant Mortality
1938	511,855	225,475	286,380	46,624
1939	559,798	259,787	300,011	56,738
1940	405,564	206,817	198,747	44,543
1941	565,895	265,288	300,607	56,457
1942	554,018	257,084	296,934	52,543
1943	588,870	297,053	291,817	57,347
1944	525,446	289,540	235,906	51,887
1945	433,261	276,582	156,679	45,752
1946	411,835	259,066	152,769	38,957
1947	413,430	234,315	179,115	32,989
1948	426,054	189,968	236,086	29,000
1949	504,682	190,401	314,281	33,271
1950	525,080	184,455	340,625	32,742
1951	552,741	193,897	358,844	36,100
1952	573,460	189,211	384,249	36,034
1953	607,188	183,066	424,122	39,397
1954	681,192	192,595	488,597	43,275
1955	694,985	189,666	507,319	38,998
1956	773,756	202,017	571,739	42,747
1957	777,436	218,142	559,285	47,963
1958	790,155	208,866	581,260	42,779
1959	861,380	206,129	655,236	40,587
1960	915,538	221,853	693,685	44,793
1961	913,805	210,709	703,096	46,575
1962	973,634	221,157	752,477	43,489

Source: *Annual Report, 1963*, Department of Health, Ministry of Public Health, Tables 1 and 9 in the Appendix.

high or not. Table 6 shows that it is on the same level as those of other Asian countries, but it is much higher than those of the economically developed countries such as U.S.A., U.K., and Japan. It should be noted that countries which have a high standard of living all have relatively low birth rates.

TABLE 6. COMPARATIVE BIRTH RATES.

Country	Birth rate per 1,000
Thailand	45.0 (1960 - 65)*
India	42.0 (1961)
Malaysia	40.9 (1960)
Cambodia	41.4 (1959)
China (Taiwan)	37.4 (1962)
Japan	17.0 (1962)
U.K.	18.3 (1962)
U.S.A.	22.4 (1962)

* Gille, H., and Chalothorn, Thip; *Demographic Outlook of Thailand and some implications*, (Revised edition), National Research Council, Thailand, p. 22.

Source: *Demographic Yearbook*, 1962, U.N., New York, pp. 127-129.

It may be concluded that if the population is increasing too rapidly, i.e. if the birth rate is too high, it will be difficult to raise the standard of living. To keep the birth rate down to a reasonable level, it is essential that the majority of the population take steps towards active family planning.

2.7 Life expectancy of the population.

Apart from the high birth rate, another factor which contributes to the population increase is undoubtedly longer life expectancy. Modern medical practice has resulted in lengthening the life-span of the majority of the population, as seen from Table 7, which was calculated by the Division of Vital Statistics, Ministry of Public Health, in 1929, 1937, 1947, and 1961. But the data of Table 7 may not be very accurate, as they were calculated from the under-reported vital statistics.

TABLE 7. LIFE EXPECTANCY OF THE THAI PEOPLE AT BIRTH AND AT
VARIOUS AGES.

Age	1929		1937		Age	1947		1959 - 61	
	Male	Female	Male	Female		Male	Female	Male	Female
0	31.61	37.45	36.73	43.30	0	48.50	51.38	53.64	58.74
					1—5	50.11	52.82	56.75	61.07
					5—10	49.56	52.08	55.97	60.21
10	40.41	47.85	45.40	51.01	10—15	46.42	48.88	52.22	56.43
					15—20	42.49	44.87	47.94	52.08
20	32.82	40.01	36.50	42.41	20—25	37.56	40.88	43.70	47.76
					25—30	34.92	37.20	39.53	43.69
					30—35	31.47	33.80	35.37	39.72
30	26.74	33.72	29.34	35.75	35—40	27.97	30.36	31.32	35.83
					40—45	24.70	26.97	27.48	32.15
					45—50	21.42	23.56	23.84	28.50
40	21.34	27.63	28.89	29.86	50—55	18.29	20.01	20.43	24.79
					55—60	15.26	16.49	17.28	21.18
50	16.30	21.54	17.13	23.80	60—65	12.10	13.04	14.24	17.68
					65—70	9.00	9.60	11.61	14.53
60	11.79	15.75	12.38	17.43	70—75	5.80	6.10	9.18	11.57
					75—80	2.20	2.22	7.31	9.28
70	7.99	10.57	8.50	11.43	80—85	—	—	5.65	7.20
					85 +	—	—	4.65	5.92

Source : Division of Vital Statistics, Ministry of Public Health, *Public Health Statistics*, p. 10 a.

Remarks: 1929 Data are for Bangkok Registration area only.

1937 Data are for Bangkok and Thonburi Municipal area only.

1947, 1959 - 61 Data are for the whole Kingdom.

3. POPULATION TREND OF THE FUTURE

3.1 Estimates of the future population of Thailand

Gille and Chalothorn,⁵ basing their assumptions on birth rate and death rate, have made four projections for the population up to 1980. The basic considerations were:

1. Fertility rate. A preliminary analysis of the 1960 census figures revealed that rural families have more children than urban families. The inference from this is as follows:

a. **Fertility decline.** If the economic and educational development programs yield fruitful results earlier than expected, a number of consequences will follow, such as more urbanization, a higher standard of living, improved status of women and wider practice of family planning. All these will result in gradual reduction of the birth rate. According to this assumption, the birth rate will fall from the current figures of 40 per 1,000 per annum (urban rate) and 45 per 1,000 per annum (rural rate) to 25 per 1,000 per annum (urban rate) and 30 per annum (rural rate) by 1980.

b. **Constant fertility.** If progress of the economic and educational programs is slow, things may not change very much by 1980, and so the birth rate may remain constant, i.e. 40 per 1,000 per annum (urban rate) and 45 per 1,000 per annum (rural rate) until 1980.

2. Mortality rate. Recently the mortality rate has been greatly reduced owing to the effective control of several dreaded epidemic diseases, such as cholera and smallpox. Better maternity services also have helped to reduce the infant mortality rate. From now up to 1980, the trend of the mortality rate may be one of the following:

a. **Rapid mortality decline.** If public health and sanitation services continue to expand rapidly, mortality will continue to decline at the present rate. As a result, the mortality rate will drop from the current rate of 11 per 1,000 per annum to $5\frac{1}{2}$ per 1,000 per annum by 1980.

b. **Moderate mortality decline.** If the suppression of epidemic diseases reaches a saturation point soon, then the mortality will henceforth be moderate. The mortality rate will drop only to 7 per 1,000 per annum in 1980.

Hence there are altogether 4 projections:

Projection I. Constant fertility, moderate mortality decline.

Projection II. Fertility decline, moderate mortality decline.

Projection III. Constant fertility, rapid mortality decline.

Projection IV. Fertility decline, rapid mortality decline.

The projected figures, classified by age-groups, are shown in Table 8.

⁵Gille, H., and Chalothorn, Thip, *Demographic Outlook of Thailand and Some Implications* (revised Edition), National Research Council, Thailand, pp. 1-33.

TABLE 8. PROJECTIONS UP TO 1980.

Projection I. Constant fertility, moderate mortality decline.

Age	1960		1965		1970		1975		1980	
	Number in 1000's	%								
0—4	4982	18.46	5783	18.20	6805	18.13	8149	18.28	9899	18.58
5—9	3999	14.82	4796	15.09	5604	14.93	6634	14.88	7989	14.99
10—14	3153	11.68	3949	12.43	4745	12.64	5555	12.46	6587	12.36
15—19	2635	9.70	3116	9.81	3910	10.42	4707	10.56	5518	10.34
	14769	54.66	17644	55.53	21064	56.12	25045	56.18	29993	56.27
20—24	2299	8.52	2599	8.18	3081	8.21	3874	8.69	4672	8.77
25—29	2055	7.61	2264	7.12	2567	6.84	3050	6.84	3843	7.21
30—34	1710	6.34	2018	6.35	2229	5.94	2535	5.69	3020	5.67
35—39	1401	5.19	1670	5.26	1978	5.27	2192	4.92	2499	4.69
40—44	1146	4.25	1358	4.27	1625	4.33	1933	4.34	2148	4.03
45—49	961	3.56	1100	3.46	1309	3.49	1527	3.53	1877	3.52
50—54	803	2.98	910	2.86	1046	2.79	1252	2.80	1510	2.83
55—59	637	2.36	747	2.35	852	2.27	985	2.21	1184	2.22
60—64	474	1.75	573	1.80	677	1.80	777	1.74	905	1.70
	11468	42.63	13239	41.65	15364	40.94	18170	40.76	21658	40.64
65—69	313	1.16	404	1.27	493	1.30	589	1.32	681	1.28
70—74	198	0.73	244	0.77	320	0.85	394	0.88	477	0.90
75—79	117	0.42	139	0.44	173	0.46	231	0.52	283	0.53
80 +	107	0.40	107	0.34	123	0.33	150	0.34	199	0.38
	735	2.71	894	2.82	1109	2.94	1364	3.06	1640	3.09
Total	26990	100 %	31777	100 %	37537	100 %	44579	100 %	53291	100 %

Projection II. Fertility decline, moderate mortality decline.

Age	1960		1965		1970		1975		1980	
	Number in 1000's	%								
0—4	4982	18.46	5782	18.19	6337	17.09	6628	15.56	7061	14.55
5—9	3999	14.82	4796	15.09	5604	15.11	6178	14.50	6498	13.39
10—14	3153	11.68	3949	12.42	4745	12.80	5555	13.04	6133	12.64
15—19	2635	9.70	3116	9.80	3910	10.55	4707	6.35	5518	11.37
	14799	54.66	17644	55.51	20596	55.55	23068	54.14	25210	51.96
20—24	2299	8.52	2599	8.18	3081	8.31	3874	9.09	4672	9.63
25—29	2055	7.61	2264	7.12	2567	6.92	3050	7.16	3843	7.92
30—34	1710	6.34	2018	6.35	2229	6.01	2535	5.95	3020	6.22
35—39	1401	5.19	1670	5.25	1978	5.33	2192	5.14	2499	5.15
40—44	1146	4.25	1358	4.27	1625	4.38	1933	4.54	2148	4.43
45—49	961	3.56	1100	3.46	1309	3.53	1572	3.69	1877	3.87
50—54	803	2.98	910	2.86	1046	2.82	1252	2.94	1510	3.11
55—59	637	2.36	747	2.35	852	2.30	985	2.31	1184	2.44
60—64	474	1.75	573	1.80	677	1.83	777	1.82	905	1.87
	11486	24.63	13239	41.65	15364	41.44	18170	42.64	21658	44.64
65—69	313	1.16	404	1.27	493	1.33	589	1.38	681	1.40
70—74	198	0.73	244	0.77	320	0.86	394	0.92	477	0.98
75—79	117	0.42	139	0.44	173	0.47	231	0.54	283	0.58
80 +	107	0.40	107	0.34	123	0.33	150	0.35	199	0.41
	735	2.71	894	2.81	1109	2.99	1364	3.20	1640	3.38
Total	26990	100%	31777	100%	37069	100%	42602	100%	48508	100%

Projection III. Constant fertility, rapid mortality decline.

Age	1960		1965		1970		1975		1980	
	Number in 1000's	%								
0—4	4982	18.46	5784	18.18	6968	18.40	8353	18.46	10136	18.65
5—9	3999	14.82	4795	15.08	5638	14.89	6831	15.10	8232	15.15
10—14	3153	11.68	3953	12.43	4757	12.56	5602	12.38	6796	12.50
15—19	2635	9.70	3120	9.81	3924	10.36	4730	10.45	5576	10.26
	14769	54.66	17652	55.50	21287	56.22	25516	56.39	30740	56.56
20—24	2299	8.52	2601	8.18	3093	8.18	3898	8.61	4707	8.66
25—29	2055	7.61	2266	7.12	2578	6.81	3072	6.79	3878	7.14
30—34	1710	6.34	2021	6.35	2241	5.92	2555	5.65	3051	5.61
35—39	1401	5.19	1670	5.25	1987	5.25	2209	4.88	2525	4.65
40—44	1146	4.25	1358	4.27	1631	4.31	1947	4.30	2173	4.00
45—49	961	3.56	1101	3.46	1317	3.48	1586	3.51	1900	3.50
50—54	803	2.98	910	2.86	1054	2.78	1265	2.80	1530	2.82
55—59	637	2.36	749	2.35	859	2.27	999	2.21	1204	2.22
60—64	474	1.75	573	1.80	684	1.81	790	1.75	923	1.70
	11486	42.63	13249	41.65	15444	40.79	18321	40.49	21891	40.28
65—69	313	1.16	405	1.27	499	1.32	601	1.33	698	1.28
70—74	198	0.73	246	0.77	325	0.86	406	0.90	493	0.91
75—79	117	0.42	140	0.44	178	0.47	238	0.53	301	0.55
80 +	107	0.40	109	0.34	128	0.34	160	0.35	213	0.39
	735	2.71	900	2.83	1130	2.98	1405	3.11	1705	3.14
Total	26990	100 %	31801	100 %	37861	100 %	45242	100 %	54336	100 %

Projection IV. Fertility decline, rapid mortality decline.

Age	1960		1965		1970		1975		1080	
	Number in 1000's	%								
0—4	4982	18.46	5784	18.18	6488	17.36	6794	15.73	7230	14.62
5—9	3999	14.82	4795	15.08	5638	15.08	6360	14.72	6718	13.58
10—14	3153	11.68	3953	12.43	4757	12.72	5602	12.97	6330	12.80
15—19	2635	9.70	3120	9.81	3924	10.50	4730	10.89	5576	11.27
	14769	54.66	17652	55.50	20807	55.66	23459	54.31	25854	52.28
20—24	2299	8.52	2601	8.18	3093	8.27	3898	9.02	4707	9.52
25—29	2055	7.61	2266	7.12	2578	6.90	3072	7.11	3878	7.84
30—34	1710	6.34	2021	6.35	2241	5.99	2555	5.91	3051	6.17
35—39	1401	5.19	1670	5.25	1987	5.32	2209	5.11	2525	5.11
40—44	1146	4.25	1358	4.27	1631	4.36	1947	4.51	2173	4.39
45—49	961	3.56	1101	3.46	1317	3.52	1586	3.67	1900	3.84
50—54	803	2.98	910	2.86	1054	2.82	1265	2.93	1530	3.09
55—59	637	2.36	749	2.35	859	2.30	999	2.31	1204	2.43
60—64	474	1.75	573	1.80	684	1.83	790	1.83	923	1.87
	11486	42.63	13249	41.65	15444	41.31	18321	42.41	21891	44.26
65—69	313	1.16	405	1.27	499	1.33	601	1.39	698	1.41
70—74	198	0.73	246	0.77	325	0.87	406	0.94	493	1.00
75—79	117	0.42	140	0.44	178	0.48	238	0.55	301	0.61
80 +	107	0.40	109	0.34	128	0.34	160	0.37	212	0.43
	735	2.71	900	2.83	1130	3.02	1405	3.25	1704	3.45
Total	26990	100%	31801	100%	37381	100%	43185	100%	49449	100%

Source: Gille, H., and Chalothorn, Thip, *Demographic Outlook of Thailand and Some Implications* (Revised Edition), National Research Council, Thailand, p.p. 24 - 27.

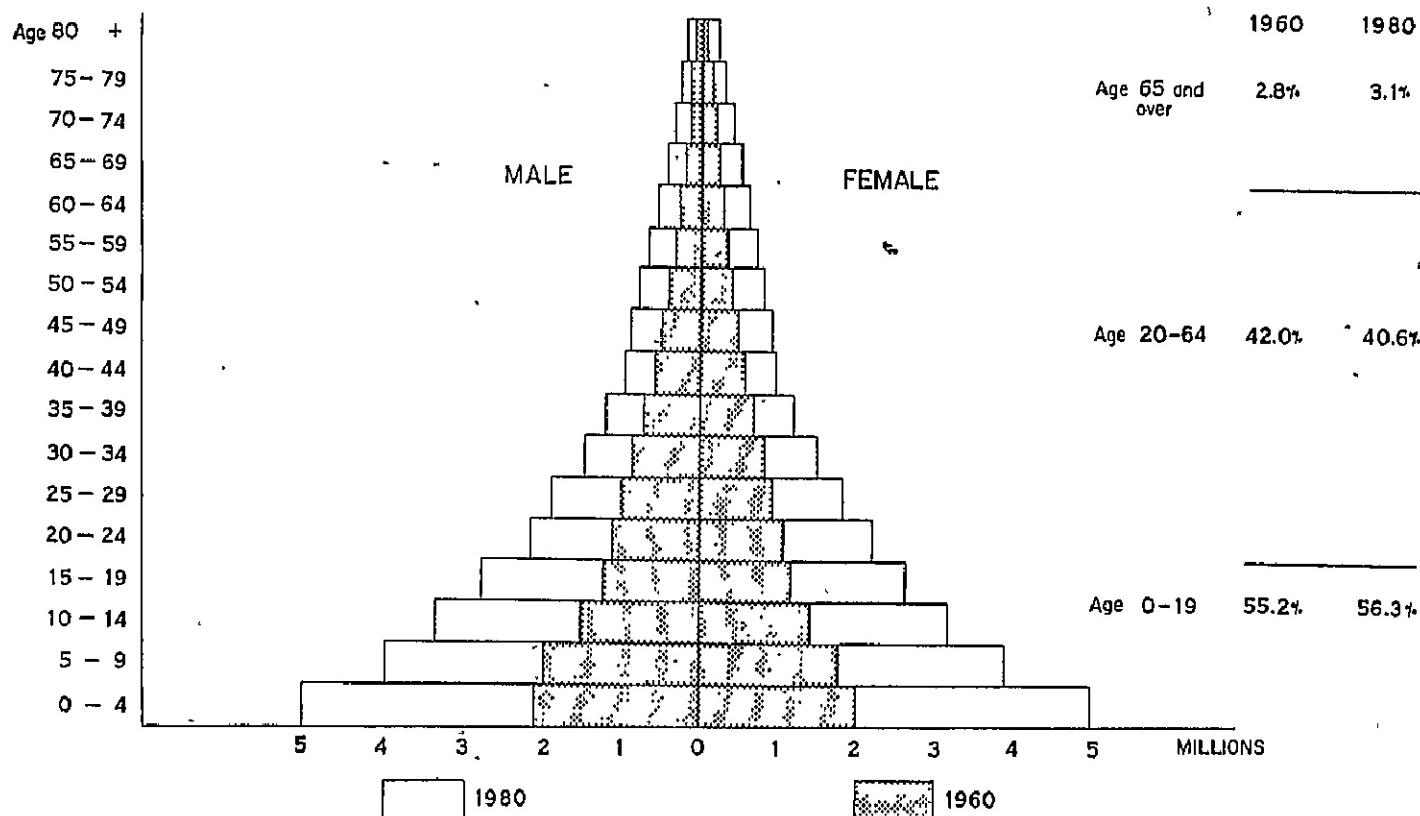


Figure 1. Size of Thailand's Population in 1960 and 1980.

3.2 The "most probable" projection.

Projection I is likely to be the "most probable" projection of the Thai population from now up to 1980, for:

a. It looks as if fertility will remain at the present high level for some time yet. The various factors which may be conducive to fertility decline, such as those described in section 3.1, paragraph 3, are not likely to display significant influences in the near future. Family planning is currently practised by only the small group with moderate or considerable incomes. The benefits of family planning will not affect a wider public in such a short interval of time. It may thus be concluded that fertility will remain constant (high) until 1980 at least.

b. The mortality decline will, from now on, be only moderate. There have been no major epidemics for some years now, and so it seems that the most notorious diseases have gradually been brought under control. The next killer to be eliminated from Thailand is malaria, but this is a long-term project, and the effects may not be felt before 1980. The mortality rate will, therefore, be declining not rapidly but moderately, because the mortality decline will henceforth be due to improved general medical and maternity services and not to the suppression of epidemic diseases.

3.3 The population pyramid.

Classification of the 1960 census figures according to age-group and sex was published in the *Statistical Yearbook, Thailand, 1963*, National Statistical office, Bangkok, p. 41. The same classification of the projected figures for 1980 was published in *Demographic Outlook of Thailand and Some Implications* (Revised edition), National Research Council, Bangkok, pp. 24-27. The data from both sources are graphically represented by a pyramid with the large number of children (ages 0-4) as a wide base. The composition of the present and future Thai populations can be read from the pyramid. The outstanding feature is the large proportion of children and youths: children under age 15 account for as much as 45% of the total population.

When one compares the percentage of children in Thailand with the corresponding figures for the U.K. and Japan, one realises the difficulty Thailand is, and will be, facing in attempting to raise her standard of living, because the percentage of dependent children in Thailand is very high. (See Table 9)

TABLE 9. COMPARATIVE DATA ON THE PERCENTAGE OF CHILDREN
UNDER AGE 15 (IN 1960).

Country	% of Children	% of adults
Thailand	45 %	55 %
U.K.	23 %	77 %
Japan	30 %	70 %

Source : *National Seminar on the Population of Thailand, March, 1963*, National Research Council, Bangkok, the plate between p. 45 and p. 46.

4. CHILD POPULATION (AGES 0-19)

4.1 The past trend of the child population.

This report is concerned mainly with the needs of children and youth (ages 0-19) who, according to the projections shown in Table 8, fall into the first four age-groups. It is essential to study the past trend of their numbers between 1929 and 1960. The following Table presents this information.

TABLE 10. CHILD POPULATION.

Year	1929		1937		1947		1960	
Total Population	11,506,207		14,464,105		17,442,689		26,257,916	
Age Group	Child pop. in each age group	% of total pop.	Child pop. in each age group	% of total pop.	Child pop. in each age group	% of total pop.	Child pop. in each age group	% of total pop.
0—4	1,782,486	15.5	2,436,726	16.85	2,644,354	15.16	4,852,254	18.48
5—9	1,432,501	12.4	2,026,199	14.01	2,470,949	14.17	4,113,168	15.67
10—14	1,287,675	11.2	1,675,283	11.58	2,259,716	12.96	3,088,173	11.76
15—19	1,285,382	11.2	1,406,207	9.72	1,944,654	11.15	2,498,938	9.28
Total	5,788,044	50.30	7,544,415	52.16	9,319,673	53.34	14,552,533	55.19

Source: Demographic Division, National Statistical Office, Unpublished data.

4.2 The future trend of the child population and its related problems.

All four projections in section 3.1 point to the same conclusion about the future trend of the child population—it is on the increase at least up to 1970. In 1960, the number of children and youth (ages 0-19) was about 14 millions, or 55.2 % of the total population (see Table 10), while in 1980 the number may go up to 30 millions—or 56.3 % of the total population, according to Projection I.

Most countries in Asia are facing the same problem—the economic burden posed by large numbers of dependent children. The existence of too many children has always been one of the causes of the relatively low standard of living here.

Many problems are magnified because of the large number of children, for example, the problems of children's education, social welfare, and health, including their proper feeding from the nutritional point of view. The nutritional problem is most felt and most obvious, because nourishing food is so essential to growing children. As for the educational problem, it has been found that the number of children is increasing much faster than the expansion of schools and teaching staff. Some fear that increasing urbanization and improved communication and transportation facilities will give rise to additional social problems, such as widespread juvenile delinquency. Such problems may be very serious indeed in view of the large proportion of juveniles in this part of the world.

But children and youth have numerous psychological needs as well as physical needs. Sports and creative activities are obvious solutions, but it is no easy task to provide such opportunities for such a large proportion of children and youth in Thailand.

4.3 School population and its projections.

As the number of children has been increasing, the school population likewise has been increasing. The term "school population" here does not include university students, as their age is likely to exceed the range (ages 0–19) to be considered in this report. In the 1960 census, the school population was 4,355,118—or 45% of the children and youth of ages 5–16. The majority of the school population is in elementary school (Grades 1–7),⁶ as shown below

Year	Total school population	Pupils in elementary schools (Grades 1–7)	%
1960	4,355,118	3,974,905	90
1963	4,771,714	4,291,235	89

It is evident that the proportion of elementary pupils (Grades 1–7) decreased slightly from 90% in 1960 to 89% in 1963. It is believed that this proportion will decrease more sharply in the near future. There are two reasons for the decrease: first, the proportion of "repeaters" in the lower primary grades is falling; and secondly, more pupils stay on for higher education.

The projections for the school population at various levels in 1980 are as follows:

⁶ Department of Educational Techniques *Educational Statistics B.E. 2503 and 2506*, Ministry of Education, 1960 and 1963.

1. Grades 1-4. For this level there are five projections assuming various degrees of "congestion" (accumulation of students at particular grade levels) due to repeaters and drop-out rates. The other assumptions are constant fertility and moderate mortality decline for children under seven years of age. The projections indicate that the number of pupils in Grades 1-4 will be between 5.52 millions and 7.80 millions by 1980⁷

2. Grades 5-7. The Department of Elementary Education, Ministry of Education, is operating an 18-year program which will terminate in 1980.

The projection in this program is based on the number of Grade 5 pupils at the beginning of the 1961 academic year (85,300 pupils), being assumed that the number of Grade 5 pupils will increase annually by a constant number of 49,700 (linear trend). This projection reflects what the present supply of teachers and the Government appropriations can provide for, rather than the actual number of Grade 4 graduates who wish to go on to Grade 5. According to this projection, the number of students in Grades 5-7 will be 2.74 millions by 1980.⁸

3. Grades 8-10. There are three projections, all of which are based upon the number of students who finished Grade 7 in 1961. That year, 19% of the Grade 7 graduates (93,790 in number) went on to Grade 8, and the projections are based on the assumption that there would be a greater proportion going on to Grade 8 in the following years. Projection I assumes an annual increase of 0.75%, i.e., in the following years, the proportion of those who would go on to Grade 8 would be 19.75%, 20.50%, 21.25%, etc. Projection II assumes an annual increase of 1.21%, while projection III assumes an annual increase of 1.63%. The projections indicate that the number of students in grades 8-10 will be between 1.03 millions and 1.70 millions by 1980.⁹

4. Grades 11-12. The method of calculation is the same as for grades 8-10. In 1961, the number of Grade 10 graduates was 66,496, and the number who went on to Grade 11 was 25,268—or 39%. It is assumed that this percentage will be increased annually by 0.75% (Projection I), or 1.21% (Projection II), or 1.63% (Projection III) in the following years. The projections reveal that the number of students in Grades 11-12 will be between 0.17 millions and 0.28 millions by 1980.¹⁰

⁷ Department of Educational Techniques, Ministry of Education, Unpublished data.

⁸ The Joint Thai-U.S. Task Force on Human Resource Development in Thailand *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, Vol. II, p. 17.

⁹ *Ibid.*, p. 235.

¹⁰ *Ibid.*, p. 236.

5. URBAN AND RURAL POPULATION

Urban population here means people who live inside the municipal areas of towns and cities. As a result of various development programs, municipalities are expanding throughout the country. At present, the number of municipalities is 120. The largest of the municipalities is Bangkok, which has a population of 1,299,528—or 39% of the total urban population.¹¹

5.1 Increase of the urban population.

In the intercensal period of 1947—1960, the urban population increased rapidly at an average rate of 5.78% per annum, which is a higher rate than the national average (3% per annum). Details are shown in Table 11.

TABLE 11. URBAN AND RURAL POPULATIONS.

Year	Total Population	Rural Population		Urban Population			
		Number	%	Number	%	Average annual increase	% increase per annum
1947	17,442,689	15,708,015	90.60	1,734,674	9.94	—	—
1952	21,115,469	18,861,179	89.33	2,253,575	10.67	103,780	5.98
1960	26,257,916	22,984,051	87.54	3,273,865	12.46	127,536	5.66

Source: *Statistical Yearbook*, No. 24, 1963, National Statistical Office, Thailand, p. 52.

The reasons for the increase are:

- (1) Declaration of new municipalities when localities qualify in regard to size of population and other requirements.
- (2) Natural increase of existing urban population (excess of births over deaths), and
- (3) Influx of rural people into urban areas.

(1) and (3) are the consequences of various modernization programs. Modernization means the introduction of more industries and commerce, which are necessarily carried out in towns and cities; and, at the same time, better road and

¹¹*Statistical Yearbook*, No. 24, 1963, National Statistical Office, Bangkok.

rail systems have opened up parts of the country which were virtually inaccessible before. Moreover, expanding trade centres, such as Bangkok and Nakorn Rajasima, have attracted a huge number of rural people into these urban areas. Meanwhile, some agricultural villages have been changing rapidly—the introduction of mechanization and scientific techniques has forced many unskilled peasants to seek work elsewhere. Although this problem affects few people at present, it may cause a significant traffic of internal migration in the near future.

As always happens, the migration of rural people into urban areas has created slums and other social problems, such as increased mental illness and social mal-adjustments. Moreover, this migration is affecting the culture of the Thais as a nation, and it is feared that some of the refined village traditions will gradually disappear.

On the average, there are no fewer than 30,000 people a year migrating into the urban areas, the majority into the Municipality of Bangkok.

5.2 Net influx of rural people into Bangkok.

The 1947–1962 statistics of the Bangkok Municipality show that nearly every year migration into the area is much heavier than migration out of it. These statistics are collected from the District Offices of the Municipality. Thai law makes it compulsory to report one's "moving-out" at the District Office of the old address, and then report one's "moving-in" at the District Office of the new address. The excess of "movings-in" over "movings-out" would represent the influx of people into Bangkok. The influx from abroad is usually small, and may be neglected, (see section 2.4). The column marked "Net Influx" in Table 12 mainly represents those coming from the rural areas.

Table 12 shows that net influx of people into Bangkok varies enormously, but, on the average, the annual influx is in the order of 27,000. There are, in general, two types of people taking part in this internal migration:

1. Workers looking for jobs in towns and cities. Most of them want a stable income all year round in contrast to the seasonal income from farm work. The jobs available in towns are chiefly construction work, transport, and domestic help.

2. Students going into towns for further education. In many cases, the villages do not offer anything beyond elementary education. Further education must be sought in towns. Although many of the provinces do have secondary schools, the people seem to prefer schools in Bangkok. The improvement of educational oppor-

tunities in the provinces with respect to both the quality of teaching and an adequate number of schools would serve to remedy this situation.

TABLE 12 NET INFLUX OF PEOPLE INTO BANGKOK, 1947-1962.

Year	Moving in	Moving out	Net Influx
1947	73,277	48,647	24,630
1948	88,125	59,742	28,383
1949	82,221	59,131	23,090
1950	84,165	66,828	17,337
1951	76,766	62,904	13,862
1952	138,598	90,029	48,569
1953	115,627	105,324	10,303
1954	138,749	127,609	11,140
1955	259,141	191,876	67,265
1956	209,333	180,179	29,154
1957	204,247	170,845	33,402
1958	234,581	208,609	25,972
1959	202,007	207,984	-5,977
1960	198,447	181,547	16,900
1961	178,829	183,638	-4,809
1962	208,300	185,546	22,484

Remark: The data for 1959 and 1961 may be inaccurate, as they apparently contradict the corresponding data for 1959 and 1961 in Table 13.

Source: Statistical Section, Central Office, Municipality of Bangkok, *Unpublished data*.

The migration of rural people into Bangkok makes the total population of Bangkok increase at a higher rate than the national average of 3% per annum. For Bangkok, the rate of increase is found to be 6.2%. Details are shown in Table 13. The increasing number of households also indicates the trend of the urban population of Bangkok, and is shown in Table 13.

5.3 Urban and rural labor force.

Economic and social changes recently have brought a great number of rural people into urban areas. The urban labor force is thus increasing more rapidly than the rural labor force. Gille and Chalothorn have made projections of the labor force up to 1980. The assumptions of the projection presented here are:

TABLE 13. THE POPULATION TREND OF BANGKOK, 1947-1962.

Year	Inhabitants	Increase	% Increase	Households
1947	604,530	-	-	88,329
1948	675,929	71,399	11.8	114,322
1949	713,641	37,712	5.6	91,403
1950	757,636	43,995	6.2	95,447
1951	803,046	45,410	6.0	98,751
1952	845,374	42,328	5.3	102,810
1953	924,990	79,616	9.4	108,950
1954	971,570	46,580	5.0	113,618
1955	1,024,502	52,932	5.4	118,135
1956	1,127,923	103,421	10.1	155,394
1957	1,204,894	76,971	6.8	160,679
1958	1,286,422	81,528	6.8	166,215
1959	1,419,492	133,070	10.3	177,627
1960	1,492,593	73,101	5.1	182,355
1961	1,548,047	55,454	3.7	180,237
1962	1,632,127	84,080	5.4	185,462
		Average	6.2	

Source: Statistics Section, Central Office, Municipality of Bangkok, Unpublished data.

1. Educational expansion would take away from the labor force many of the population whose ages are between 10 and 19. By 1980, the part of the urban labor force constituted by the age group 10-14 would decrease by a third, and the same would apply by the age group 15-19. The part of the rural labor force made up of the age group 10-14 would decrease by a third, but that of the age group 15-19 would not change.

2. By 1980, the labor force above age 60 would be decreased by a third.

3. In rural areas, the male and female component of the labor force would be almost equal in number, while in the urban areas, the female component of the labor force would be less than the male component.

As for the birth rate and death rate, the assumptions of Projection I in section 3.1 have been used, i.e., a constant fertility rate and a moderate decline of the mortality rate. A detailed view of the urban and rural labor forces, classified by age group and sex, is shown in Table 14 (a), and the percentage which the future labor force is of the total population is shown in Table 14 (b).

TABLE 14(a) PROJECTIONS FOR URBAN AND RURAL LABOR FORCES

Age	Existing figures in 1,000's				Projection I Figures in 1,000's							
	1960				1970				1980			
	Urban		Rural		Urban		Rural		Urban		Rural	
	M	F	M	F	M	F	M	F	M	F	M	F
11—19	60	60	1453	1643	98	98	1976	2141	139	140	2535	2742
20—34	258	142	2578	2446	448	196	3241	3072	798	284	4572	4362
35—49	148	78	1577	1436	268	114	2131	1977	489	158	2695	2530
50%	76	40	954	807	106	56	1277	1083	144	73	1764	1519
All ages	542	320	6562	6332	920	464	8625	8273	1570	655	11566	11153
Urban total and rural total	862		12,898		1,384		16,898		2,225		22,719	
Grand total	13,756				18,282				24,944			

Source : Gille, H., and Chalothorn, Thip, *Demographic Outlook of Thailand and some implications* (Revised Edition), National Research Council, Thailand, p. 30.

TABLE 14 (b). PERCENTAGE OF THE LABOR FORCE.

Year	Total Population	Total Labor Force	%	Urban % of labor force	Rural % of labor force
1960	26,258	13,756	52.39	6.27	93.73
1970	37,537	18,282	48.40	5.27	92.43
1980	53,291	24,944	46.80	8.42	91.08

Source : Gille, H., and Chalothorn, Thip, *Demographic Outlook of Thailand and some Implications* (Revised edition), National Research Council, Thailand, p. 30.

The projection indicates that the total labor force would be 18.3 millions by 1970, consisting of 1.4 millions in the urban labor force, and 16.9 millions in the rural labor force. By 1980, the total labor force would increase to 24.9 millions, of which the urban component would be 2.2 millions and the rural component would be 22.7 millions.

Comparison of the labor force of 1960 with that of 1980 shows that the urban labor force would increase from 862,000 to 2,225,000 or 2.58 times (approximately $2\frac{1}{2}$ times), and the rural labor force would increase from 12,894,000 to 22,719,000 or 1.76 times (approximately $1\frac{3}{4}$ times).

Because of the higher proportion of children and aged people in the future population, the percentage which the total labor force is of the total population will be decreasing from 52.4% in 1960 to 48.7% in 1970 and further to 46.8% in 1980.

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- 2) Department of Educational Techniques, Ministry of Education.
- 3) Section of Statistics and Registration, Central Office, Municipality of Bangkok.

2. STUDY ON HEALTH

INTRODUCTION

It is essential to create good health so as to provide a firm foundation for the development of the nation's manpower resources. In order to obtain information about the health problems and needs of children so that national attention may be focused on the preparation of plans to promote hygiene and sound development of children, the authors aim at presenting a view of the present health conditions of the nation. The study is proposed to examine the problems along the following lines:

1. Vital Statistics and Causes of Death
2. Control of Communicable Diseases
3. Promotion of Health
4. Medical and Health Services
5. Training of Medical and Health Personnel

In examining these topics, statistical data and reports concerning health and hygiene are consulted, and high officials in medical and public health services are interviewed. The following brief report is the outcome of this approach.

Communicable diseases are the main cause of illness and death in many countries, including Thailand. Several decades ago dangerous infectious diseases, such as cholera, smallpox and even malaria, took a heavy toll of lives each year. The Government's concern in those days was focused principally on the curing of the diseases; the preventive program was not as actively instituted and as extensive as it is nowadays. However, in order to organize effective control of these diseases, in 1897 the Thai Government proclaimed the Local Sanitation Enactment which was considered the first act of this kind and also the first attempt to provide a way to combat the diseases. Unfortunately, in practice the public did not realize the importance of public health services, so they failed to cooperate sufficiently. Therefore the illness and death caused by dangerous infectious diseases continued to exist widely. Consequently, the Government set up sanitation committees in urban communities and in 1913 enacted the Infectious Disease Law which could help, to some extent, alleviate these dreadful diseases.

The Department of Public Health was established in 1913 under control of the Ministry of Interior to supervise the medical and public health services. Then in 1942 the Department was expanded and elevated to the status of an independent ministry. The public health activities were therefore expanded, especially in the control and treatment of all communicable diseases. This included malaria, leprosy, tuberculosis and intestinal parasitic diseases, which caused a high incidence of illness and death throughout the country. But the results achieved were still far from satisfactory. From 1922 to 1929 malaria still took the lives of 40,000 people each year. A nation-wide survey in 1953 disclosed that there were

200,000 lepers. Tuberculosis was a distinct problem in densely populated areas, and its mortality rate reached 100 per 100,000 persons annually. Yaws was well known in rural districts; in 1950 there were 1,500,000 yaws victims in Thailand. Each year the diseases of the digestive system attacked more than 10,000 people and about 60 per cent of the population were infected by intestinal parasites. Plague still existed on a small scale, whereas cholera recurred regularly every five years, although its death rate had been reduced. During World War II there was an outbreak of cholera throughout the country which took a toll of 13,000 lives. Smallpox—which had been well-suppressed for many years—revisited Thailand, and before it could be countered 16,000 people fell victim to it.

After World War II, a program for infectious disease control has been energetically implemented in Thailand with the cooperation of international agencies such as UNICEF, WHO and USOM. Furthermore, the Government has begun to promote better health conditions for the whole public, especially in the rural areas where the majority of the population live. While thus involved in promoting public health, the Government bears in mind the objective of raising the health conditions of the nation to conform to international standards. However, it is not easy to achieve this goal as there are many other development projects to accomplish such as those concerning education, social welfare, economics, agriculture, and communications.

Nevertheless, the present health standard of Thailand has been much improved compared to that of 25 years ago. This statement is supported by the following facts:

1. The life expectancy of men rose from 36 years in 1937 to 53 in 1961 and that of women rose from 43 to 58 years during the same period.
2. The mortality rate of children under one year was lowered from 104.2 per 1,000 live births in 1937 to 44.7 in 1962.
3. The mortality rate of Thai people of all ages was lowered from 17.3 per 1,000 population in 1937 to 8.0 in 1962.
4. The stillbirth rate came down from 3.8 per 1000 live births in 1937 to 1.9 in 1962.
5. The number of maternal deaths in childbirth decreased from 8.2 per 1000 live births in 1937 to 3.7 in 1962.
6. The number of deaths from tuberculosis of the respiratory system decreased from 50.7 per 1,00,000 population in 1952 to 31.6 in 1962.
7. The number of deaths from malaria decreased from 297.1 per 100,000 population in 1947 to 24.3 in 1962.
8. The number of patients with venereal diseases was lowered from 1.2 per 100,000 population in 1951 to 0.2 in 1962.
9. The number of cured lepers increased from 8,000 in 1956 to 80,000 in 1962.

10. The number of yaws patients decreased from 340,000 in 1954 to 1,800 in 1962.

11. The mortality rate of plague decreased from 113 per 1,000 in 1948 to a negligible level in 1962.

12. The number of deaths from cholera came down from 15 (per 33 patients) in 1948 to no patients and deaths in 1962.

Major causes of death for Thai people of all ages in 1962 are as follows (percentages of total death);

III-defined diseases	69.72	per cent
Unspecified diseases of children under one year	6.61	per cent
Diseases of the digestive system	5.06	per cent
Tuberculosis of the respiratory system	3.96	per cent
Pneumonia	3.62	per cent
Malaria	3.05	per cent
Heart diseases	2.51	per cent
Accidents	2.40	per cent
Complications of pregnancy, childbirth and puerperium	less than 2.00	per cent
Beriberi	less than 2.00	per cent

The current longer life of the Thai people and the alleviation of illness results from the program of control of communicable diseases which is in full effect. This entire program is composed of several control projects directed at these specific diseases: tuberculosis, malaria, venereal diseases, yaws, and leprosy. It also includes control project for dangerous epidemic diseases, such as smallpox and cholera. Most of these projects have been carried out with great success, although some have not yielded particularly favorable results, such as the control programs for haemorrhagic fever, intestinal parasitic diseases, trachoma, and nutritional ailments. The more limited success experienced in these projects may be attributable to the fact that control procedures are still in the trial stage, and that some of the causes are undiscovered or are currently irremediable.

A national program aimed at promoting health in general has contributed to some of the accomplishments already cited. In order to be maximally effective in such an undertaking, the Ministry of Public Health needs the cooperation of other ministries such as the Ministries of Education, Interior, and Agriculture. In order to focus on several interrelated objectives, the Department of Health, of the Ministry of Public Health, has organized a program of rural health promotion, maternal and child health, school health, and nutritional promotion. The consequences of the projects may be thus summarized:

a. The rural health promotion project involved 334 villages initially (1960) and then focused on 2,695 additional villages (by 1963); between 1960 and 1963 the number of uncontaminated sources of water was increased from 227 to 3,261 and the number of sanitary latrines was increased from 6,513 to 65,015.

b. As for maternal and child health, the number of graduates from the school of midwifery increased from 160 per year (before 1963) to 201 in 1963. From 1957 to 1963 more indigenous midwives were trained, the number increasing from 700 to 11,012. The number of midwifery centers increased from 746 to 1070. The number of first-class health centers increased from 111 to 158 and second-class centers from 647 to 701.

c. With respect to school health, from 1960 to 1963 the number of students who had been given physical examinations increased from 1,444,000 to 2,569,000. The number of sick students who had received treatment increased from 53,000 to 129,000. The number of schools which had been inspected by medical and health officers increased from 12,000 to 19,000.

In 1962 there existed 195 hospitals in Thailand, 98 of which were under the supervision of the Ministry of public Health, 25 of which were under control of other ministries, 21 of which were supervised by charitable organizations and 51 of which were privately run. This number included not only general hospitals but also hospitals for specific diseases.

There were 20,000 beds for all general patients and 5,200 for mental ones.

In 1963 there existed centers for specific health services: for instance, maternal and child health, communicable diseases control, malaria control, school health and sanitation. The stationary and mobile units of these centers numbered 200.

In 1963 the Division of Medical Registration in the Ministry of Public Health had a registration of 3,800 physicians, 335 dentists, 1,108 pharmacists, 5,467 nurse-midwives and 716 midwives. During a ten year period, from 1955 to 1964, the average increase per year amounted to 184 physicians, 24 dentists, 58 pharmacists, 337 nurse-midwives and 69 midwives.

The University of Medical Sciences in Thailand has authority over ten different schools with the responsibility for producing trained physicians, dentists, pharmacists, nurses, midwives and other medical and health personnel.

The statistical data for 1963 reveal that in Thailand there was one physician per 8,000 population, one nurse per 3,000 and one hospital bed per 1,500. In Bangkok there was one physician per 800 and one hospital bed per 200, while in rural areas the rate was one physician per 25,000 and one hospital bed per 2,400.

The physician-population and nurse-population ratios in Thailand are still very unfavorable compared with the international standard which designates one physician for 800 population and one nurse for 400 population.

Considering the current population growth rate in Thailand and the desirability of bringing the physician-population and nurse-population ratio's into conformity with the international standard, Thailand must produce ten times more physicians and nurses per year than what it does at present.

1. VITAL STATISTICS AND CAUSES OF DEATH

A United Nations committee of experts has agreed that the primary health indicators of a country are: (a) life expectancy at birth and at various subsequent ages, and (b) rate of mortality of children under one year.¹

1.1 Life expectancy.

Considering the statistics of these two measures for Thailand, it is evident that the health condition has become continually better after World War II. The increase in life expectancy at birth and at various ages of the Thai people is shown in Table 1.

TABLE 1. LIFE EXPECTANCY OF THE THAI AT BIRTH AND AT VARIOUS AGES.

Age	1929		1937		Age	1947		1959-61	
	Male	Female	Male	Female		Male	Female	Male	Female
0	31.61	37.45	36.73	43.30	0	48.50	51.38	53.64	58.74
					1—5	50.11	52.82	56.75	61.07
					5—10	49.56	52.08	55.97	60.21
10	40.41	47.85	45.40	51.01	10—15	46.42	48.88	52.22	56.43
					15—20	42.49	44.87	47.94	52.08
20	32.82	40.01	36.50	42.41	20—25	37.56	40.88	43.70	47.76
					25—30	34.92	37.20	39.53	43.69
					30—35	31.47	33.80	35.37	39.72
30	26.74	33.72	29.34	35.75	35—40	27.97	30.36	31.32	35.83
					40—45	24.70	26.97	27.48	32.15
40	21.34	27.63	28.89	29.86	45—50	21.42	23.56	23.84	28.50
					50—55	18.29	20.01	20.43	24.79
50	16.30	21.54	17.13	23.80	55—60	15.26	16.49	17.28	21.18
					65—70	12.10	13.04	14.24	17.68
60	11.79	15.75	12.88	17.43	70—75	9.00	9.60	11.61	14.53
					75—80	5.80	6.10	9.18	11.57
70	7.99	10.57	8.50	11.43	80—85	2.20	2.22	7.31	9.28
					85 +	—	—	5.65	7.20
80	4.84	6.28	5.25	6.65	—	—	—	4.65	5.92

Source : Division of Vital Statistics, Ministry of Public Health, *Public Health Statistics* p. 10 a.

Remarks : 1929 Data are for Bangkok Registration area only.

1937 Data are for Bangkok and Thonburi Municipal Area only.

1947, 1959-61 Data are for the whole Kingdom.

¹ Sicault, Georges, ed., *The Needs of Children*, The Free Press of Glencoe, New York, p. 27.

Table 1 indicates that during the past 32 years, from 1929 to 1961, the life expectancy of both Thai men and women became much higher. The life expectancy at birth of Thai men increased from 31.61 years in 1929 to 53.64 in 1961, and that of Thai women increased from 37.45 to 58.74 years in the same period. An increase in the expectation of life at various subsequent ages for both men and women also has occurred. A comparison of the life expectancy of Thai men and of the men in other countries is presented in Table 2.

TABLE 2. COMPARISON OF LIFE EXPECTANCY OF THAI MEN AND OF CAMBODIAN, MALAYSIAN, JAPANESE, SWISS, AND AMERICAN MEN.

Age	Thai 1956-61	Cambodian 1958-59	Malaysian 1956-58	Japanese 1959	Swiss 1959	American 1959
0	53.64	44.2	55.78	65.21	71.69	66.5
1—5	56.75	50.8	57.06	63.45	68.26	63.9
5—10	55.97	47.6	54.20	58.81	63.45	59.0
10—15	52.22	43.2	49.63	53.99	58.57	54.2
15—20	47.94	39.4	45.12	49.31	53.84	49.5
20—25	43.70	35.4	40.72	44.81	49.17	45.0
25—30	39.53	—	36.36	40.31	44.43	40.3
30—35	35.37	27.5	32.08	35.79	39.72	35.7
35—40	31.32	—	27.96	31.30	35.03	31.2
40—45	27.48	20.6	22.96	26.90	30.40	26.9
45—50	23.84	—	20.35	22.69	25.97	22.8
50—55	20.43	14.5	17.06	18.47	21.72	19.1
55—60	17.28	—	14.10	15.16	17.75	15.7
60—65	14.24	2.9	11.55	11.91	14.07	12.7
65—70	11.61	—	9.39	9.10	10.84	10.2
70—75	9.18	5.0	7.58	6.81	8.12	6.0
75—80	7.31	—	5.80	5.00	5.86	6.1
80—85	5.65	—	3.97	3.71	4.10	4.7
85+	4.65	—	—	—	—	—

Source : For Thailand, Division of Vital Statistics, Ministry of Public Health, *Public Health Statistics*, p. 10 a.

For other countries, United Nations, *Demographic Yearbook 1961*, pp. 622-641.

The figures in Table 2 lead to the conclusions that the life expectancy of Thai men was :

- a. higher than that of the Cambodians both at birth and at subsequent ages.
- b. lower than that of the Malaysians at birth and up to the age of 5, and otherwise higher.
- c. lower than that of the Japanese at birth and up to the age of 35, and otherwise higher.
- d. lower than that of the Swiss at birth and up to the age of 60, and otherwise higher.
- e. lower than that of the American at birth and up to the age of 35, and otherwise higher.

A comparison of the life expectancy of Thai women and of the women in those countries is shown in Table 3.

TABLE 3. COMPARISON OF LIFE EXPECTANCY OF THAI MEN AND OF CAMBODIAN, MALAYSIAN, JAPANESE, SWISS, AND AMERICAN MEN.

Age	Thai 1959—61	Cambodian 1958—59	Malaysian 1956—58	Japanese 1959	Swiss 1959	American 1959
0	58.74	48.3	58.19	69.88	75.24	73.0
1—5	61.07	30.2	59.84	67.78	70.45	70.0
5—10	60.21	46.4	56.69	63.06	66.57	65.1
10—15	56.43	41.9	51.10	58.21	61.64	60.2
15—20	52.08	38.4	46.77	53.45	56.75	55.4
20—25	47.76	34.6	42.66	48.81	51.78	50.6
25—30	43.69	—	38.72	44.21	47.03	45.8
30—35	39.72	28.1	34.84	39.62	42.19	41.1
35—40	35.83	—	31.02	35.08	37.43	36.4
40—45	32.15	22.1	27.19	30.60	32.77	31.9
45—50	28.50	—	23.38	26.24	28.18	27.5
50—55	24.79	15.4	19.90	22.06	23.75	23.3
55—60	21.18	—	16.70	18.10	19.49	19.3
60—65	17.68	10.7	18.80	14.37	15.50	15.5
65—70	14.53	—	11.23	11.05	11.90	12.2
70—75	11.57	5.0	8.86	8.25	8.84	9.3
75—80	9.28	—	6.73	6.07	6.35	6.7
80—85	7.20	—	4.61	4.82	4.51	4.7
85 +	5.92	—	—	—	—	—

Source : For Thailand, Division of Vital Statistics, Ministry of Public Health, *Public Health Statistics*, p. 10 a.
 For other countries, United Nations, *Demographic Yearbook*, 1961, pp. 622-641.

The results of the comparisons obtained from Table 3 are somewhat similar to those from Table 2. The life expectancy of Thai women was:

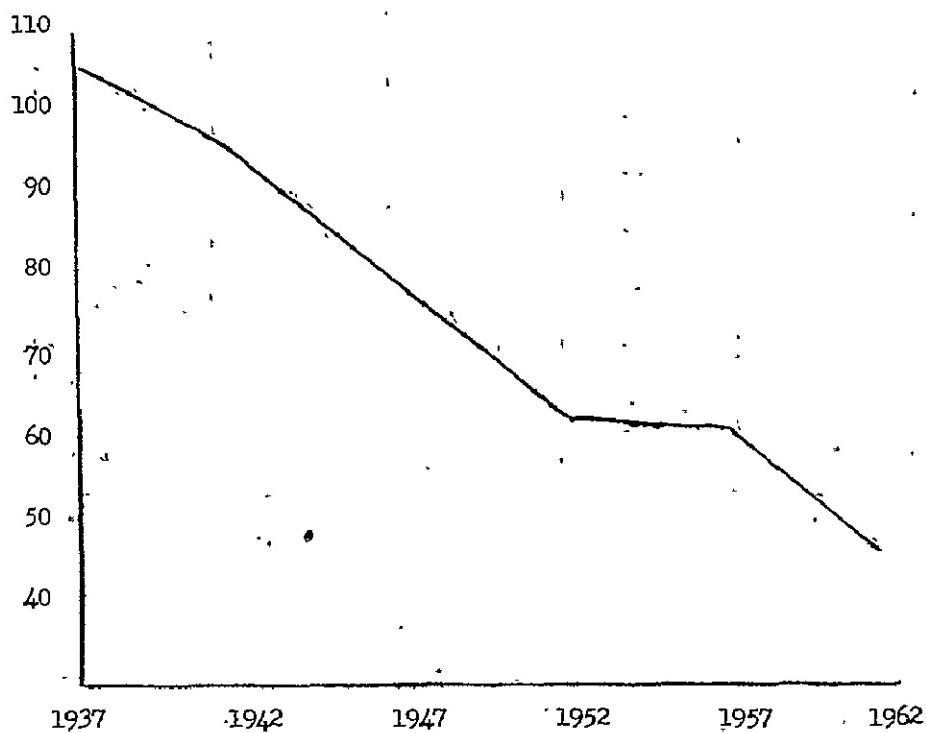
- a. higher than that of the Cambodians and the Malaysians
- b. lower than that of the Japanese at birth and up to the age of 30, and otherwise higher.
- c. lower than that of the Swiss at birth and up to the age of 45, and otherwise higher.
- d. lower than that of the American at birth and up to the age of 40, and otherwise higher.

It is worthwhile to note that the life expectancy of Thai people was lower than that of people in the countries advanced in health—like Japan, Switzerland, and the United States—at birth and up to the age of between 30 and 60 only. After that

the life expectancy of Thai people was higher than those people. This can be interpreted to mean that if there is a decrease of the death rate of Thai children and adults from the time of birth through age 60, most Thai people will live as long as—or even longer than—the people in those advanced countries. In attempts to improve the health condition of the country the Government should, therefore, emphasize the health status of children and younger adults.

1.2 Death rates.

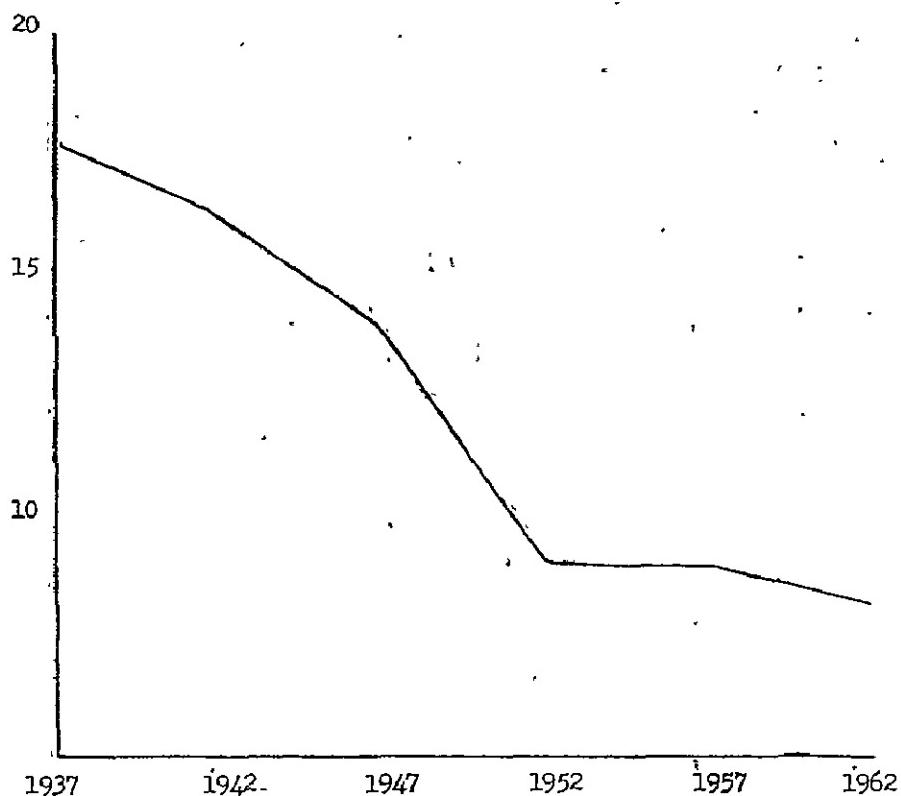
During period of 25 years, from 1937 through 1962, the mortality rate of the Thai people was impressively lowered, as can be seen in Figures 1 and 2.



Source: Department of Health, Ministry of public Health, *Annual Report, B.E. 2506*.

Figure 1. Mortality Rate of Thai Children Under One Year Per 1,000 Live Births, 1937-1962.

Figure 1 indicates that in 1937 the rate of mortality of children under one year was fairly high, being 104.2 in every 1,000 live births. By 1962 the rate had dropped to 44.7. Though this is not yet as low as that of children in the advanced countries (see Figure 3), the rate of decrease every five years is worth noting. The mortality rate of the Thai population can be seen in Figure 2.



Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*,

Figure 2. Mortality Rate of Thai People Per 1,000 Population, 1937-1962.

The death rate of the Thai people as a whole also has decreased. There was a drop from 17.3 deaths per 1,000 population in 1937 to 8.0 in 1962. Comparison of this with the Swiss and American records reveals that the death rate of the Thai people was lower during recent years. (See Figure 4).

The number and percentage of deaths in the Thai population at various ages is shown in Table 4.

Table 4 indicates that there were more deaths at the age of less than one year than at any other age level; the average percentage of deaths during this period was 20.4 for the years reported in Table 4. The average death rate percentage of 5.9 for children at 1 year of age ranked second. In third place was the children whose age was 5-9 years, the average percentage of death being 5.5, and the average death percentage of 4.5 for adults at 45-49 years of age was the fourth highest.

TABLE 4. NUMBER AND PERCENTAGE OF DEATHS OF THE THAI PEOPLE
BY AGE GROUP 1958-1962.

Age	1958		1959		1960		1961		1962	
	No.	%								
Total	208,866	100.0	206,129	100.0	221,853	100.0	210,709	100.0	221,157	100.0
Under 1	42,779	20.5	40,587	19.7	44,793	20.2	46,575	22.1	43,489	19.7
1	12,135	5.8	12,528	6.1	14,591	6.6	11,148	5.3	12,187	5.5
2	8,214	3.9	8,124	3.9	10,011	4.5	7,384	3.5	8,583	3.9
3	8,007	3.8	6,487	3.2	8,109	3.7	5,999	2.9	6,752	3.0
4	5,334	2.5	4,964	2.4	5,129	2.3	4,423	2.1	4,831	2.2
5—9	12,499	6.0	12,069	5.8	12,634	5.7	10,471	5.0	11,350	5.1
10—14	5,353	2.6	5,357	2.6	5,829	2.6	5,346	2.5	5,582	2.5
15—19	5,310	2.5	4,907	2.4	5,084	2.3	5,220	2.5	5,059	2.3
20—24	7,037	3.4	6,537	3.2	6,822	3.1	6,535	3.1	6,593	3.0
25—29	6,734	3.2	6,362	3.1	6,665	3.0	6,402	3.0	6,548	3.0
30—34	6,954	3.3	6,792	3.3	6,933	3.1	6,820	3.2	7,063	3.2
35—39	7,234	3.5	7,232	3.5	7,361	3.3	7,154	3.4	7,325	3.3
40—44	7,731	3.7	7,443	3.6	7,632	3.4	7,074	3.4	7,621	3.4
45—49	8,093	3.8	7,899	3.8	8,123	3.7	7,789	3.7	8,119	3.7
50—54	8,772	4.2	8,647	4.2	8,706	3.9	8,439	4.0	9,054	4.1
55—59	8,506	4.1	8,717	4.4	8,929	4.0	8,710	4.1	9,520	4.3
60—64	8,961	4.3	9,121	4.4	9,636	4.3	9,517	4.5	9,999	4.5
65—69	8,034	3.3	8,190	4.0	8,524	3.8	8,438	4.0	9,322	4.2
70—74	7,690	3.7	8,102	3.9	8,287	3.8	8,588	4.1	9,230	4.2
75—79	6,432	3.1	6,530	3.2	6,680	3.0	9,720	3.2	7,685	3.5
80—84	5,140	2.5	5,159	2.5	5,473	2.5	5,565	2.6	6,181	2.8
85 +	5,420	2.6	5,404	2.6	5,587	2.5	5,838	2.8	6,558	3.0
Unknown	6,497	3.1	8,970	4.4	10,356	4.7	10,554	5.0	12,506	5.6

Source : Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506.*

In the report above, the number of stillbirths was not included. It is therefore presented in Table 5.

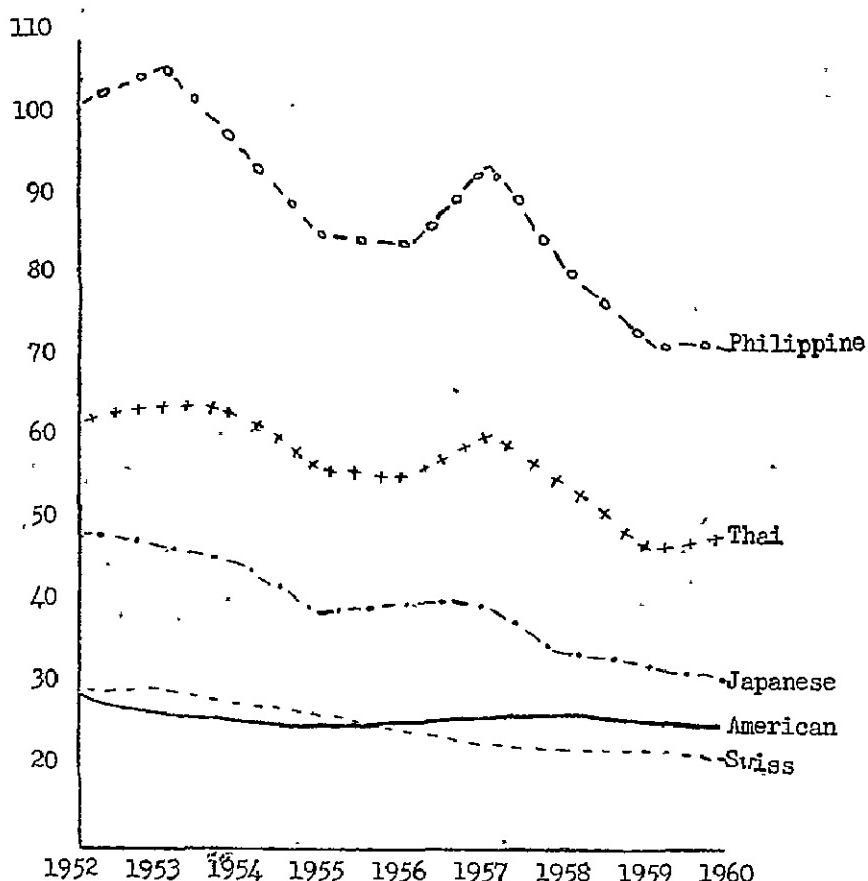
TABLE 5. RATE OF STILLBIRTHS PER 1,000 LIVE BIRTHS OF THE THAI PEOPLE 1937-1962.

Year	Rate
1937	3.8
1942	3.5
1947	2.0
1952	1.7
1957	1.3
1962	1.9

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506.*

The number of death due to stillbirths in Thailand has not been very high, and a decrease has been recorded every five years except in the last five years, from 1957 to 1962. This low reported number of stillbirths is probably due to the fact that stillbirth registration is not accomplished thoroughly. There may be more stillbirths which have not been reported.

To illustrate the comparison of mortality rate of Thai children under one year and that of children in the Philippines, Japan, Switzerland and the United States, Figure 3 is presented:

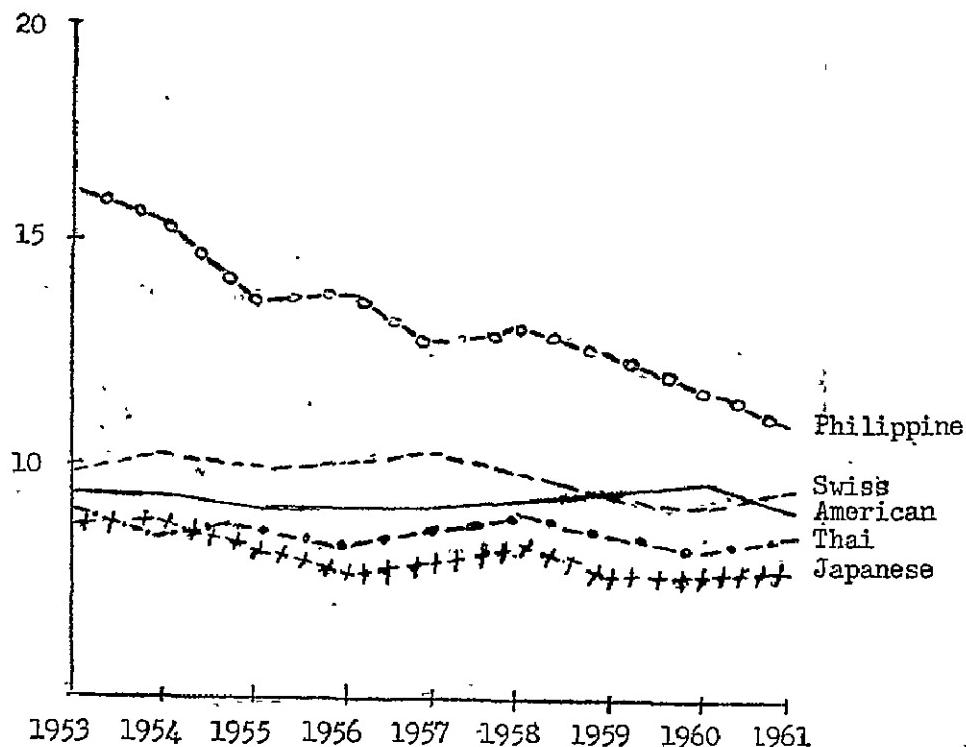


Source: For Thailand, Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*
For other countries, United Nations, *Demographic Yearbook, 1961*, pp. 222-236.

Figure 3. Comparison of Mortality Rate Per 1,000 Live Births of Thai Children Under One Year And That of Philippine, Japanese, Swiss, And American Children, 1952-1960.

The death rate of Thai children under one year was lower than that of Philippine children but higher than that of Japanese, Swiss, and American children. Nevertheless, the figures for Thailand show a decreasing infant mortality trend and it is likely that the death rate of Thai children will continue to decrease if the health conditions keep improving. It is of interest to see that the graphs representing the death rate in the advanced countries more or less remained at the same levels each year, but the rises and falls of the graphs representing Thailand and the Philippines were sharp, probably indicating the instability of the health status of the countries.

The mortality rate of the general population in Thailand, compared to that of the populations in the countries previously referred to, is illustrated in Figure 4.



Source: For Thailand, Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.
For other countries, United Nations, *Demographic Yearbook, 1961*, pp. 264-280.

Figure 4. Comparison of Mortality Rate Per 1,000 Population of Thai People And That of Philippine, Japanese, Swiss, And American People, 1953-1961.

As pictured in Figure 4, the death rate of Thai people was lower than that of the Philippine, Swiss and American people but slightly higher than that of the Japanese. This is contrary to what is observed in Figure 3, with respect to

mortality of children under one year of age, where it was noted that the death rate in Thailand was higher than that in Switzerland and the United States. But in the case of the death rate of the people at all age levels, the rate in Thailand was lower. Reasons for this difference should be investigated.

Another comparison presented here is the number of deaths by age group of Thai people and of people in the Philippines, Japan, and America.

TABLE 6: COMPARISON OF NUMBER AND PERCENTAGE OF DEATHS BY AGE GROUP OF THAI PEOPLE AND OF PHILIPPINE, JAPANESE, AND AMERICAN PEOPLE, 1959.

Age	Thai		Philippine		Japanese		American	
	Number	%	Number	%	Number	%	Number	%
All ages not less than 1	165,541	100	122,740	100	635,164	100	1,537,806	100
1—4	32,103	19.39	30,387	24.76	17,934	2.82	17,116	1.11
5—9	12,069	7.29	7,301	5.95	9,812	1.54	9,028	0.59
10—14	5,357	3.24	2,234	1.82	5,937	0.93	7,402	0.48
15—19	4,907	2.96	3,929	3.20	9,931	1.56	11,031	0.72
20—24	6,537	3.95	4,387	3.57	15,253	2.40	13,337	0.87
25—29	6,362	3.84	4,268	3.84	16,527	2.60	14,084	0.92
30—34	6,792	4.10	4,307	3.51	16,520	2.60	19,734	1.28
35—39	7,232	4.37	4,895	3.99	15,496	2.44	28,377	1.85
40—44	7,443	4.50	4,757	3.88	17,823	2.81	41,569	2.70
45—49	7,899	4.77	5,537	4.51	15,729	4.05	62,544	4.07
50—54	8,647	5.22	4,599	3.75	34,531	5.44	81,521	5.30
55—59	8,717	5.27	5,314	4.33	48,650	7.66	114,895	7.47
60—64	9,121	5.51	8,687	7.08	58,996	9.29	148,102	9.63
65—69	8,190	4.95	4,333	3.53	71,162	11.20	191,536	12.46
70—74	8,102	4.89	5,352	4.36	83,717	13.18	214,256	13.93
75—79	6,530	3.94	4,340	3.54	83,985	13.22	210,524	13.69
80—84	5,159	3.12	17,160	13.98	65,043	10.24	177,601	11.55
85 +	5,404	3.26	—	—	38,085	6.00	174,368	11.34
Unknown	8,970	5.42	953	0.78	33	0.01	780	0.05

Source For Thailand, Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

For other countries, United Nations, *Demographic Yearbook 1961*, pp. 280-359.

Table 6 is here discussed in terms of the age groups which present the highest mortality rates in each country. The three highest orders are as follows:

	First Order	Second Order	Third Order
Thailand	1 - 4	5 - 9	60 - 64
The Philippines	1 - 4	80 - 84	60 - 64
Japan	75 - 79	70 - 74	65 - 69
The United States	70 - 74	75 - 79	65 - 69

The figures shown lead to the conclusion that in the less-developed countries like Thailand and the Philippines more young people died than the old ones, while in the advanced countries like Japan and the United States more people died when they were over 65 years of age. This is because in the less-developed countries there are still a number of diseases of children which take a heavy toll, and the maternal and child health services are also poor. Those people who survive after the age of about 20 may live even longer than the people in the advanced countries. (See Tables 2 and 3). Thus, if Thailand can remedy its weak points regarding the health condition of infants and children, most Thai children will grow up to be healthy adults who will live to later years of life.

The presentation of the rate of stillbirths in different countries is given in Table 7.

TABLE 7. COMPARISON OF RATE OF STILLBIRTHS PER 1,000 LIVE BIRTHS IN THAILAND AND IN THE PHILIPPINES, JAPAN, SWITZERLAND, AND THE UNITED STATES, 1952-1960.

Year	Thailand	The Philip-pines	Japan	Switzerland	The United States
1952	1.7	11.5	31.3	15.3	14.7
1953	1.6	12.3	31.7	15.6	14.2
1954	1.6	—	31.4	14.5	13.8
1955	1.6	—	30.8	13.7	13.5
1956	1.4	—	31.9	14.3	13.0
1957	1.3	14.8	32.5	12.6	12.9
1958	1.5	10.4	32.3	12.6	13.0
1959	1.9	14.5	31.7	12.0	12.7
1960	1.7	15.9	30.8	—	12.7

Source: For Thailand, Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.
For other countries, United Nations, *Demographic Yearbook, 1961*, pp. 186-195.

Of the five countries for which information is shown in Table 7, the rate of stillbirths in Thailand was the lowest. It is probable that the registration of

stillbirths in the less-developed countries is not strictly practiced, as has been stated above. A number of stillbirths in the remote areas may not have been reported; in many cases parents may not have taken trouble to do so. Moreover, the statistical data on stillbirths are generally unreliable in most parts of the world.²

1.3 Cause of death.

The causes of death in Thailand may be divided into two categories, in accordance with the practice followed in the surveys by WHO:³ a) the diseases for which the incidence is still world-wide, like tuberculosis; and b) those that are now largely confined to the less-developed countries in the tropics, such as diseases of the digestive system, nutritional ailments, and malaria. Relevant data are shown in Tables 8 and 9

TABLE 8. MAJOR CAUSES OF DEATH OF THAI CHILDREN UNDER ONE YEAR BY NUMBER AND RATE PER 1,000/LIVE BIRTHS, 1958-1962.

Causes	1958		1959		1960		1961		1962	
	No	Rate	No	Rate	No.	Rate	No.	Rate	No.	Rate
Total	47,779	54.1	40,587	47.1	44,793	49.0	46,575	50.8	43,489	44.7
Nutritional maladjustment	3,674	4.6	3,451	4.0	2,392	2.6	1,994	2.2	1,824	1.9
Certain symptoms referable to nervous system	3,150	4.0	2,609	3.0	2,068	2.3	1,908	2.1	2,125	2.2
Ill-defined diseases peculiar to first year of life	10,732	13.6	9,594	11.1	11,541	12.6	11,489	12.5	10,507	10.8
Malaria	671	0.8	624	0.7	634	0.7	746	0.8	732	0.8
Gastro enteritis, colitis, diarrhoea	2,940	3.7	2,816	3.0	3,216	3.6	2,715	3.0	2,972	3.1
Pneumonia	3,392	4.3	2,935	3.4	2,973	3.3	3,049	3.3	3,145	3.2
Dysentery	723	0.4	306	0.4	349	0.4	324	0.3	208	0.2
Acute naso-pharyngitis	1,317	1.7	1,196	1.4	1,389	1.5	796	0.9	569	0.6
Measles	144	0.1	131	0.2	182	0.2	82	0.1	121	0.1
Influenza	152	0.2	386	0.5	209	0.2	324	0.3	147	0.2
Others	15,884	20.1	16,739	19.4 ⁴	19,810	21.6	23,148	25.3	21,139	21.7

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

The leading causes of death of infants as shown in Table 8 may be arranged in order from highest to lowest according to the average death rate for the five-year period as follows:

² United Nations, *Demographic Yearbook, 1961*, p. 96.

³ Sicault, *op. cit.*, pp. 32-34.

1. Ill-defined diseases peculiar to first year of life
2. Pneumonia
3. Gastro-enteritis, colitis and diarrhoea
4. Nutritional maladjustment
5. Certain symptoms referable to nervous system
6. Acute naso-pharyngitis
7. Malaria
8. Dysentery
9. Influenza
10. Measles

TABLE 9. MAJOR CAUSES OF DEATH OF THAI PEOPLE BY NUMBER AND RATE PER 100,000/POPULATION, 1958-1962.

Causes	1958		1959		1960		1961		1962	
	No.	Rate								
Total	208,866	834.9	206,129	802.1	221,853	841.0	210,709	778.5	221,157	797.0
Malaria	9,462	37.8	8,530	33.2	7,960	30.2	6,636	24.5	6,739	24.3
Gastro-enteritis and Colitis	9,724	38.9	8,531	33.2	10,201	38.7	8,438	31.2	9,516	31.0
Dysentery	2,347	9.4	1,865	7.2	2,061	7.8	1,431	5.3	1,466	5.3
Certain diseases peculiar to first year of life	16,051	64.2	14,598	56.8	16,148	61.2	15,281	56.5	14,615	52.7
Tuberculosis	9,536	38.1	9,757	38.0	9,166	34.7	8,438	31.2	8,760	31.6
Pneumonia	9,732	38.9	8,839	34.4	8,577	32.5	7,720	38.5	8,010	38.9
Diseases of pregnancy, childbirth and puerperium	3,756	15.0	3,964	15.4	3,855	14.6	3,615	13.5	3,644	13.1
Accidents	4,138	16.5	4,475	17.4	4,684	17.8	4,859	18.0	5,307	19.1
Diseases of stomach and duodenum	2,112	8.4	1,294	5.0	1,466	5.6	1,241	4.6	1,042	3.8
Diseases of heart	3,409	13.6	4,118	16.0	5,020	19.0	4,832	17.8	5,568	20.1
Beriberi	1,680	6.7	1,223	4.8	1,172	4.4	806	3.3	921	3.3
Typhoid and paratyphoid	1,503	6.0	1,228	4.8	1,561	5.9	1,261	4.6	1,354	4.9
Others	135,425	541.3	137,707	535.8	149,979	568.6	146,028	539.5	154,185	555.7

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

The order of leading causes of death of the general population as recorded in Table 9 is as follows:

1. Certain diseases peculiar to first year of life
2. Pneumonia
3. Gastro-enteritis and colitis
4. Tuberculosis

5. Malaria
6. Accidents
7. Diseases of heart
8. Diseases of pregnancy, childbirth and puerperium
9. Diseases of stomach and duodenum
10. Typhoid and paratyphoid
11. Beriberi

As far as causes of death are concerned, diseases of the digestive system, or, in other words, diseases associated with what people eat and how they live, such as diarrhoea, dysentery, typhoid, intestinal parasitic diseases, nutritional maladjustment and other diseases of the stomach and intestines, play a major role. It may be that the kind of food Thai people like to eat—for instance, highly spicy food, fermented and/or uncooked or half cooked food—is one of the reasons. The food itself may also not be clean. The observance of regular mealtimes is usually neglected and eating between meals is common, particularly among children and younger people. Some people even refuse to eat high-value foods, choosing to confine themselves to eating spicy sauces and other kinds of unnutritious food along with their rice.

Moreover, most people in the rural areas still live in unhygienic surroundings. For example, in some remote areas there are no sources of clean water and no sanitary latrines. Such conditions of life not only provide sources of diseases, but also encourage the spread of diseases.

These “eating-living” diseases, if we may call them so, have become one of the most serious public health problems,⁴ and thus have weakened the human resources of the country.

⁴Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, pp. 35-36

2. CONTROL OF COMMUNICABLE DISEASES

In the control of communicable diseases, emphasis is placed on the preventive aspect, although the curative services are not neglected. The work undertaken is as follows:

- a. Services for inoculation and vaccination against the diseases.
- b. Advice concerning the diseases through the distribution of pamphlets and through other mass media of communication.
- c. Control of pests that are carriers of the diseases.
- d. Control of diseases that may be imported from abroad through the requirement of health certificates for travellers who visit this country,

With assistance from the specialized agencies of the United Nations such as UNICEF and WHO and from other international organizations like AID, several nation-wide control projects are now underway, directed at tuberculosis, malaria, venereal diseases, leprosy and haemorrhagic fever. These several communicable diseases may be grouped as follows:

- a. Those that made high death rates in the past, and though the rates have been reduced, they still are major causes of death in Thailand, such as tuberculosis and malaria.
- b. Those that cause some or no death, but are difficult to keep under control, either because problems in other aspects are involved, or because complete cure of the diseases is time-consuming, such as venereal diseases and leprosy.
- c. Those whose nature is still under study, like haemorrhagic fever.
- d. Those infectious diseases whose incidence has been brought down to a controllable level, such as smallpox and cholera.

TABLE 10. ACHIEVEMENTS OF COMMUNICABLE DISEASES CONTROL.

Vaccinations	Number Vaccinated			
	1960	1961	1962	1963
Smallpox	4,145,604	7,278,140	14,476,938	12,886,117
Cholera	866,924	1,105,091	1,301,300	9,277,505
Cholera and typhoid	406,129	659,503	1,339,136	847,947
Typhoid	19,226	4,733	13,127	16,433
Diphtheria	204,923	82,247	138,423	184,199
Pertussis	16,318	8,033	3,901	7,517
Diphtheria and pertussis	30,757	21,544	36,319	59,026
Rabies in men	10,757	11,943	13,852	13,290
Rabies in dogs	14,047	8,387	6,644	5,676

Source : Department of Health, Ministry of Public Health; *Annual Report, B.E. 2503, 2504, 2505, 2506..*

e. Those associated with unsanitary conditions, for instance, diseases of the digestive system and intestinal parasitic diseases.

f. Those infecting animals which, in turn, are transferred to men, such as rabies, anthrax and trichinosis.

The achievements of the control projects in the past four years are shown in Table 10.

The figures in Table 10 indicate an increase in the number of the people immunized against the diseases in the course of several years.

2.1 Tuberculosis.

Tuberculosis has been one of the major public health problems. Cases of tuberculosis have been found in every part of the country. As a cause of death throughout the nation tuberculosis ranks second, and for the people in Bangkok it stands first. The Annual Report in 1963 of the Tuberculosis Association of Thailand indicated that there were over 1,500,000 tuberculosis cases in Thailand and about 10,000 people died of this disease every year. Ten percent of the deaths occurred in Bangkok.⁵

Sixty per cent of Thai children under 14 years were infected with tuberculosis. This is a rather high percentage. The control is deemed satisfactory when the rate of infected children comes down to one per cent.⁶ In the over-populated

TABLE 11. NUMBER OF DEATHS FROM TUBERCULOSIS OF RESPIRATORY SYSTEM AND RATE PER 100,000 POPULATION 1952-1962

Year	Total	Male	Female	Rate
1952	10,602	6,195	4,407	50.7
1953	9,219	5,267	3,952	42.7
1954	10,098	5,715	4,383	45.3
1955	10,376	5,941	4,435	45.2
1956	10,135	5,750	4,385	42.9
1957	11,134	6,150	4,984	45.8
1958	9,536	5,397	4,139	38.1
1959	9,757	5,668	4,089	38.0
1960	9,164	5,203	3,962	34.7
1961	8,438	4,812	3,626	31.2
1962	8,760	5,025	3,735	31.6

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

⁵ The Tuberculosis Association of Thailand, *Annual Report, B.E. 2506*.

⁶ Wisarnwetaya, Prakob, *Tuberculosis Control in Thailand*, Dissertation, Division of Tuberculosis Control, B.E. 2505, pp. 3-4.

sections in Bangkok, like Patumwan District, 6.47 per cent of the people had tuberculosis, and among these 1.83 per cent were found to be active cases.⁷

To show the incidence of tuberculosis by sex and age group, Tables 11 and 12 are presented.

TABLE 12. NUMBER AND PERCENTAGE OF DEATHS BY AGE GROUP FROM TUBERCULOSIS OF RESPIRATORY SYSTEM, 1958-1962.

Age	1958		1959		1960		1961		1962	
	No.	Rate								
Total	9,536	100.0	9,757	100.0	9,164	100.0	8,438	100.0	8,760	100.0
Under 1	27	0.3	31	0.3	43	0.5	47	0.6	32	0.4
1	47	0.5	30	0.3	34	0.4	30	0.3	34	0.4
2	33	0.3	29	0.3	27	0.3	32	0.4	36	0.4
3	28	0.3	20	0.2	29	0.3	18	0.2	30	0.3
4	22	0.2	19	0.2	23	0.2	17	0.2	14	0.2
5-9	108	1.1	65	0.7	72	0.8	59	0.7	58	0.7
10-14	92	1.0	55	0.6	77	0.8	66	0.8	69	0.8
15-19	180	1.9	127	1.3	144	1.6	134	1.6	124	1.4
20-24	366	3.8	315	3.2	320	3.5	302	3.6	278	3.2
25-29	432	4.5	444	4.6	464	5.1	413	4.9	403	4.6
30-34	654	6.8	630	6.4	631	6.9	565	6.7	550	6.3
35-39	709	7.4	764	7.8	705	7.7	670	7.9	649	7.4
40-44	1,008	10.6	1,001	10.3	903	9.9	797	9.4	865	9.9
45-49	1,208	12.7	1,280	13.1	1,176	12.8	1,030	12.2	1,048	12.0
50-54	1,315	13.8	1,376	14.1	1,229	13.4	1,109	13.1	1,185	13.5
55-59	1,264	13.2	1,321	13.5	1,232	13.4	1,128	13.4	1,237	14.1
60-64	864	9.1	995	10.2	893	9.7	883	10.6	842	9.6
65-69	551	5.8	539	5.5	485	5.3	417	4.9	475	5.4
70-74	187	2.0	221	2.3	195	2.1	220	2.6	241	2.7
75-79	96	1.0	108	1.1	126	1.4	86	1.0	107	1.2
80-84	45	0.5	36	0.4	27	0.3	35	0.4	39	0.4
85+	34	0.4	23	0.2	26	0.3	28	0.3	26	0.3
Unknown	266	2.8	328	3.4	303	3.3	352	4.2	418	4.8

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

Tables 11 and 12 indicate that there was a reduction of deaths from tuberculosis from 50.7 per 100,000 population in 1952 to 31.6 in 1962, that more men died of tuberculosis than women, and that there were more deaths of people in the age group of 40-59 than in any other age group.

The country-wide tuberculosis control project has been in operation since 1951 with the assistance of UNICEF and WHO. The ultimate purpose of the project

⁷ Ibid., pp. 3-4.

is to wipe out or, at least, to reduce the number of tuberculosis cases to a minimum, so that the disease can be kept under control. The control process consists of:

- a. Examinations of the population to find cases with tuberculosis so that curative and preventive services can be provided.
- b. Investigation concerning the spread, prevention and control of the disease.
- c. Services for BCG vaccination to protect people from the disease.
- d. Services for health education, so that people will learn about the disease.

At present there are several tuberculosis control centers located in different parts of the country.⁸ In the central area there is one tuberculosis hospital, two central clinics with two other branches, five mobile X-ray units and six mobile BCG vaccination units. In the provincial areas there are regional chest clinics at Chiengmai and Khonkaen, and another one will soon be established at Yala.

The achievements of these several tuberculosis control centers may be seen in the data in Table 13.

TABLE 13. ACHIEVEMENTS OF TUBERCULOSIS CONTROL 1959-1963.

Number	1959	1960	1961	1962	1963
People examined	120,275	137,979	103,897	157,037	169,424
New cases examined	17,433	23,414	21,634	31,163	36,665
Cases discovered	6,075	5,895	6,258	8,771	9,854
Persons X-rayed	42,146	50,193	60,992	55,535	71,314
Sputum examinations	25,334	28,214	23,485	37,684	45,132
Home visits by public health nurses	13,636	10,549	7,920	18,508	18,079
Contacts examined	8,451	9,222	9,562	13,838	13,936
Cases given socio-economic assistance	631	496	485	706	930
Tuberculin tests	1,328,622	1,331,349	834,692	937,191	996,703
Persons BCG vaccinated	532,140	476,398	333,986	412,902	445,969

Source. Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*,

It can be stated that among the tuberculosis cases who came for treatment at the tuberculosis centers 50 per cent were found to be in the infectious stage, and a half of these cases may now be completely cured. This means that of 100 tuberculosis cases coming for treatment, 50 cases are infectious and 25 cases can

⁸ Department of Health, *Annual Report, B.E. 2506*, p. 231.

be completely cured. Since each infectious tuberculosis case has a chance to spread the disease to about 100 other persons every year, the complete cure of 25 will spare some 2,500 persons from the likelihood of being infected; in other words, 2,500 persons will be protected from tuberculosis for every 100 tuberculosis cases who come for treatment. Therefore, the more cases that are found, the more people can be protected.

It is also certain that 80 per cent of the people who have had a full course of tuberculin tests and BCG vaccinations will be saved from tuberculosis.⁹ Considering the figures on these measures in Table 13, it may be said that the number of people protected from the disease has increased considerably each year. Nevertheless, tuberculosis control measures will have to be actively carried out until tuberculosis cases and number of deaths from the disease can be brought down to a much lower level so that tuberculosis does not constitute a major cause of deaths any longer.

2.2 Malaria

Malaria has long been a threatening disease throughout most parts of the country. After World War II, with the assistance of international organizations, a large

TABLE 14. NUMBER AND RATE OF DEATHS FROM MALARIA PER 100,000 POPULATION, 1947-1962.

Year	Number	Rate
1947	52,034	297.1
1948	44,215	243.0
1949	38,046	201.5
1950	35,819	183.1
1951	34,225	169.1
1952	29,115	139.2
1953	21,451	99.3
1954	16,473	73.9
1955	14,520	63.2
1956	12,617	53.3
1957	10,458	43.0
1958	9,462	37.8
1959	8,530	33.2
1960	7,960	30.2
1961	6,636	24.5
1962	6,739	24.3

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

⁹ *Ibid.*, pp. 244-245.

scale control project was undertaken and has lowered the malaria death rate as shown in Table 14.

Though there has been a decrease of the malaria death rate from 297.1 in 1947 to 24.3 in 1962, malaria is still one of the leading causes of death in Thailand.

With a view to discussing the incidence of deaths due to malaria in different age groups, Table 15 is presented.

TABLE 15. NUMBER AND PERCENTAGE OF DEATHS FROM MALARIA BY AGE GROUP, 1958-1962.

Age	1958		1959		1960		1961		1962	
	No.	Rate								
Total	9,462	100.0	8,530	100.0	7,960	100.0	6,636	100.0	6,739	100.0
Under 1	671	7.1	624	7.3	637	8.0	746	11.2	732	10.9
1	582	6.2	521	6.1	575	7.2	437	6.6	422	6.3
2	459	4.8	415	4.9	428	5.4	344	5.2	354	5.2
3	561	5.9	441	5.2	427	5.4	380	5.7	335	5.0
4	447	4.7	354	4.2	312	4.3	296	4.5	279	4.1
5—9	1,312	13.9	1,092	12.8	944	11.9	747	11.3	791	11.7
10—14	473	5.0	486	5.7	431	5.4	365	5.5	363	5.4
15—19	511	5.4	409	4.8	370	4.6	334	5.0	319	4.7
20—24	505	5.3	489	5.7	433	5.4	360	5.4	364	5.4
25—29	467	4.9	391	4.6	376	4.7	278	4.2	356	5.3
30—34	421	4.4	388	4.5	341	4.3	299	4.5	315	4.7
35—39	404	4.3	396	4.6	343	4.3	280	4.2	290	4.3
40—44	433	4.6	412	4.8	362	4.6	281	4.2	298	4.4
45—49	433	4.6	382	4.5	311	3.9	242	3.6	256	3.8
50—54	456	4.8	414	4.9	361	4.5	284	4.3	257	3.8
55—59	406	4.3	332	3.9	326	4.1	239	3.6	260	3.9
60—64	308	3.3	276	3.2	259	3.3	184	2.8	183	2.7
65—69	179	1.9	168	2.0	167	2.1	146	2.2	134	2.0
70—74	59	0.6	95	1.1	86	1.1	64	1.0	78	1.2
75—79	44	0.5	66	0.8	58	0.7	40	0.6	54	0.8
80—84	18	0.2	40	0.5	34	0.4	15	0.2	18	0.3
85 +	19	0.2	20	0.2	36	0.5	13	0.2	15	0.2
Unknown	294	3.1	319	3.7	313	3.9	262	4.0	266	3.9

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*.

The records show that malaria deaths occurred among people at all age levels, although more children died of malaria than adults. Of the total deaths due to this disease, 53.3 per cent occurred among children under 19 years, 43.2 per cent among those under 10 years, and 31.5 per cent among those under 5 years.

The anti-malaria campaign using new techniques was first started in 1949 with the help of UNICEF and WHO. At the termination of this assistance in 1952 control project support was provided by AID. As the scope of the campaign

continually expanded, a new objective—malaria eradication—was chosen. This is an eight-year program, from 1958–1965, which consists of insecticide spraying, case-finding, treatment, health education, investigation, research and training of personnel. In a period of 12 years, from 1950 to 1962, the malaria control program yielded considerable achievements as shown in Table 16.

TABLE 16. NUMBER OF THE POPULATION PROTECTED FROM MALARIA,
1950–1962.

Year	Spraying	Vigilance	Surveillance	Total
1950	77,503	—	—	77,503
1951	581,318	—	—	581,318
1952	1,570,249	—	—	1,570,249
1953	3,016,808	63,727	—	3,080,535
1954	4,266,442	414,776	—	4,681,218
1955	5,618,856	1,636,192	—	7,255,048
1956	7,364,176	3,052,107	—	10,416,283
1957	7,640,891	4,000,886	382,924	12,024,701
1958	7,833,290	2,983,476	1,568,395	12,385,161
1959	6,988,095	—	7,124,294	14,112,389
1960	6,321,576	—	6,246,036	12,567,612
1961	5,466,332	—	5,468,894	10,935,226
1962	9,434,879	—	11,356,312	20,791,191

Source: Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, p. 22.

Remarks: "Vigilance" means being alertly watchful of conditions when result of malariormetric surveys conducted annually in all malarious areas have resulted in discontinuance of spraying operations.

"Surveillance" means house to house visits and collection of blood films from all suspected malaria cases.

There is an indication in the records that more and more people have been protected from malaria. Therefore, it is hoped that within a few years malaria will not be a major cause of death any longer. This, in turn, will improve the manpower resources of the country, since a greater number of children will survive and be able to contribute their talents.

2.3 Venereal diseases.

Venereal diseases have been for decades a major public health problem, as a complete cure of the diseases takes time and the diseases themselves are easily spread. Worst of all, they can have very adverse effects on the health of mothers and babies.

Venereal disease control has been in operation for a long time, but during the period 1952 to 1954 a more scientific control program was organized with the assistance of AID. The scope of work has become considerably wider. At present there are 32 control centers of venereal diseases throughout the country. The National Venereal Disease Conference was organized in 1961, and is held annually in order to discuss the existing situation and to set up an efficient plan for the prevention and control of the diseases. Various health agencies including the Medical Departments of the Army, Navy and Air-Force, the Police Department, the University of Medical Sciences, the Department of Welfare, Bangkok Municipality, WHO, and certain hospitals, are represented at the Conference. The Department of Health, of the Ministry of Public Health, has promoted close cooperation among the above-mentioned agencies in conducting its control program against these dreadful diseases.

In the campaign many modern approaches have been undertaken, including case-finding, contact investigation, treatment, control, follow-up, and health education.

Case-finding surveys in various parts of the country reveal that among the people infected with venereal diseases 50 per cent were children in the age-group of 15-24, and that there were more men than women afflicted, the percentages being 59.8 and 40.2 per cent, respectively. Most of the women cases were prostitutes.¹⁰

It is of major importance in the control of venereal diseases that chances of being exposed to the diseases be avoided, and that those infected have the most effective treatment as quick as possible. The control can not be carried out successfully without the cooperation of other organizations involved, since venereal diseases are associated with other problems which have socio-economic, educational, and moral aspects.

2.4 Leprosy.

Besides being a problem in public health, leprosy is a sociological problem. Since lepers are not accepted in any professional and social groups, most of them live by begging.

Leprosy is a chronic contagious disease which results in physical deformity. The latency period of the disease is very long and thus there are not any symptoms of the disease until later stages. Once the symptoms show, the case is serious.

There is a prevalence of leprosy in the North and Northeast of the country. The control campaign was therefore started in this area in 1955. With the cooperation of UNICEF and WHO a pilot project was initiated in Khonkaen

¹⁰ Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, p. 26.

Province, the area most dominated by the disease. By 1962 the leprosy control operation had expanded to 14 other provinces in the same region.

The ultimate goal of the control program is to reduce the incidence of the disease to a controllable level by providing treatment to the cases found. It is expected that by 1966 the program will be expanded to all parts of the country and that more than 200,000 lepers will be treated.¹¹ The disease control units include the permanent leprosy units at the health centers, mobile units, advisory units, treatment units, follow-up units and evaluation units. There are now several permanent and mobile leprosy control units. There are also rehabilitation centers and settlements, some of which are set up by charitable organizations. At these leprosy centers more and more patients have come for treatment, as recorded in Table 17.

TABLE 17. NUMBER OF LEPROSY PATIENTS REGISTERED FOR TREATMENT, 1956-1962.

Year	Patients Registered
1956	8,493
1957	12,148
1958	23,440
1959	32,744
1960	51,695
1961	63,751
1962	81,463

Source: Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, p. 29.

Since complete cure from leprosy takes a long time, at some settlements a school is organized for the children of the patients. One school, Rajprachasamasai School, is founded particularly to take care of children whose parents are leprosy patients under treatment. At Pra Pradaeng Leprosarium, schooling is organized for all patients.

In addition to providing regular treatment, occupational therapy has been offered with the aim of encouraging patients to earn their living in agricultural and manual work suitable to their physical abilities. This occupational training includes weaving, sewing, carpentry and other craftwork.

As can be seen, the leprosy control program is supported not only by the Government but also by charitable and private organizations. Therefore, it is hoped that success in the control of this disease will soon be achieved.

¹¹ Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*, p. 265.

2.5 Yaws.

Before 1950 yaws used to be widespread in 45 provinces of the country. Out of 15,000,000 population in these provinces, 5,000,000 were infected with yaws.¹²

The yaws control program was established in 1950 with the assistance of WHO and UNICEF. The objectives of the program are:

a. to reduce the incidence of the disease to the lowest level that it can be effectively controlled by integrated rural health services.

b. to carry out a systematic nation-wide control program by means of examination and re-examination of the population and providing curative treatment to all yaws cases and their contacts.

c. to train local personnel in methods of diagnosis, treatment and control of yaws in order to help in the betterment of rural health conditions.

TABLE 18. ACHIEVEMENTS OF YAWS CONTROL, 1950-1962.

Year	Number Examined	Cases found and treated			
		Yaws Cases	Contacts	Other Diseases	Total
1950	277,668	17,991	—	452	18,443
1951	532,454	82,924	—	2,011	84,935
1952	1,110,611	112,665	3,052	8,590	124,307
1953	2,024,174	140,227	20,721	15,680	176,628
1954	3,242,535	246,746	25,892	39,756	412,394
1955	2,935,180	250,041	219,776	19,485	489,302
1956	2,218,221	146,868	386,691	24,011	557,570
1957	2,016,154	97,356	682,123	41,686	821,165
1958	1,790,331	85,053	383,860	70,522	739,435
1959	2,352,889	44,983	28,774	91,800	165,557
1960	2,983,279	16,614	18,332	45,107	6,058
1961	1,216,514	4,442	3,103	953	78,498
1962	702,201	1,846	1,811	929	4,586
Total	23,402,211	1,347,756	1,770,135	360,982	3,478,873

Source : Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, p. 24.

*In the surveys for yaws cases, patients with other diseases were found, to whom curative treatment were also given.

¹² Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, p. 23

As the yaws control program has had to cover several large areas, five yaws control centers have been established in three different regions of the country—the Northeast, the Central and the South. To each center four to twelve mobile units are attached. The yaws control operation as a whole has been very successful, as can be seen in the achievements recorded in Table 18.

The re-survey carried out in 1962 in the 45 provinces where formerly yaws was prevalent revealed very low incidence of the disease, and in many localities there were practically no cases of yaws at all, the incidence being as low as 0.007 per cent. Thus, it can be stated that yaws is no longer a public health problem.¹³ However, the work of the program will still be carried out until not a single case of infectious yaws can be discovered for a consecutive period of three years.¹⁴

2.6 Haemorrhagic fever.

This disease was first recognized in Thailand as an epidemic disease in a relatively small outbreak in 1954 in Bangkok, and was diagnosed as haemorrhagic fever in 1958. The epidemics usually start at the beginning of the rainy season, reach the peak around September and then gradually subside. Most of the cases are pre-school children.

In order to illustrate the incidence of haemorrhagic fever, Table 19 is presented.

Though the figures in Table 19 show a decrease of the death-rate, the number of cases in 1962 was two times as many as that in 1958. This indicates that haemorrhagic fever has become an urgent public health problem. The reasons for the high incidence of the disease every two years is worth investigating.

TABLE 19. NUMBER AND PERCENTAGE OF DEATHS FROM HAEMORRHAGIC FEVER, 1958-1962.

Year	Cases	Deaths	% of deaths
1958	2,418	240	10.0
1959	124	15	12.1
1960	1,742	59	3.4
1961	104	4	3.8
1962	4,532	187	4.4

Source. Ministry of Public Health, *Public Health in Thailand*, B.E. 2506, Bangkok, Thailand, p. 32.

¹³ *Ibid.*, p. 24.

¹⁴ *Ibid.*, p. 33.

The control of the disease in the central area has been carried out with the cooperation of Bangkok and Dhonburi municipalities. The measures undertaken have included primarily getting rid of the mosquito breeding places, destruction of mosquitoes and their larvae, and other protection from mosquito bites, particularly for children below 10 years of age.

SEATO Medical Research Laboratory has been a great help in the identification of haemorrhagic fever cases through blood examination and in investigation as to the nature and epidemiology of the disease.

The center of haemorrhagic fever investigation and control has been set up at the Obstetric Department of Pra Mongkut Klaø Hospital. Its objectives are to provide treatment to children and to seek for the most effective and control measures for the disease.

In addition there is an experimental control project at Hauy Kwang where more research on the disease is being conducted.

2.7 Intestinal parasitic diseases.

The control project for intestinal parasitic diseases was set up in 1951 with the assistance of USOM. Unfortunately, this control program terminated in 1955.

The country-wide surveys in 1951 revealed that intestinal parasitic diseases were most prevalent in the southern area of the country. (See Table 20). Seven different kinds of parasites were discovered.

In order to carry out the work effectively, five parasitic disease control centers were established in the provincial areas. These later became a part of the rural

TABLE 20. NUMBER AND PERCENTAGE OF CASES WITH INTESTINAL PARASITIC DISEASES, 1951.

Region	No. Examined	Cases Found	% of Incidence among examinees	Types						
				Round Worm	Hook Worm	Whip Worm	Strongyloid	Tape Worm	Liver Fluke	Intestinal Fluke
North	5,017	2,373	47.3	27.4	14.7	3.4	.08	0.9	6.3	—
Central	12,060	5,158	42.7	29.0	11.8	3.3	0.1	0.2	0.2	1.9
North-east	16,776	10,603	63.2	6.1	29.8	10.4	0.9	2.6	31.4	—
South	6,308	5,875	93.8	76.7	36.4	47.2	—	—	—	—

Source: Department of Health, Ministry of Public Health

sanitation improvement program. Examination and treatment for cases of parasitic diseases has not been widely conducted since 1955, except in selected villages as part of the Village Health Sanitation Project.

2.8 Trachoma and conjunctivitis.

Trachoma and conjunctivitis have been found to be most prevalent in the northeastern region. The incidence in this region is as high as 43.7 per cent, this being at Nakorn Rajsima. The incidence for the disease in other regions is: 9.8 per cent in the North, 6.6 per cent in the Central and 3.3 per cent in the South.¹⁵

A survey was conducted through 12 monthly examinations of 13,000 children under ten years of age in five northeastern villages. At the same time studies on the virus which causes the diseases were made. The survey revealed that in the cold season, from November to February, only 8-10 per cent of cases with conjunctivitis were found. In June, the beginning of the rainy season, the incidence was highest, with the percentage of 30.2; then toward the end of the rainy season, from July to September, the disease began to subside, and the incidence ranged between 21 and 29 per cent.¹⁶

It can be stated that conjunctivitis causes a wide spread of trachoma. At the same time that the above-mentioned study was conducted, a survey accomplished with the cooperation of SEATO on the spread of insects showed that the period during which there was the greatest number of flies coincided with high incidence of trachoma.

A six-year trachoma control program was initiated in 1961, beginning with the operation in the northeastern region. The program is now in effect in other regions as well. Once success in trachoma control is achieved, a great advance in the protection of eye-sight will have been made, for the number of cases with eye-diseases which may result in blindness will be considerably lowered. There will be a reduction of the loss of manpower to the country due to blindness.

2.9 Smallpox.

The incidence of smallpox has been more or less kept under control, as seen in Table 21.

The last major outbreak of smallpox occurred in the period 1945 to 1947, when 16,000 deaths out of 64,000 cases were recorded.¹⁷ After that there have been occasional outbreaks of the disease which were not very serious, except in 1959. In 1962 only one case was found.

¹⁵ Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*, pp. 161-163.

¹⁶ *Ibid.*, p. 163.

¹⁷ Department of Health, Ministry of Public Health, *Health Progress, 1961-1962*, Thailand, p. 42.

TABLE 21. NUMBER OF DEATHS FROM SMALLPOX, 1948-1962.

Year	Cases	Deaths
1948	514	58
1949	107	16
1950	348	41
1951	34	2
1952	43	4
1953	50	—
1954	21	—
1955	117	—
1956	14	—
1957	3	—
1958	28	7
1959	1,548	272
1960	32	11
1961	33	4
1962	1	1

Source: Department of Health, Ministry of Public Health, *Health Progress 1961-1962*, Thailand, pp. 42-43.

Thailand started its three-year smallpox eradication program in 1961. The target was to vaccinate and revaccinate at least 80 per cent of the whole population. The objective, however, could not easily be accomplished for many reasons. For instance there was the distance to remote villages, poor communications, and shortage of personnel. The program was extended for another period of two years therefore.

Achievements since the initiation of the program are recorded in Table 22.

It is expected that by the termination of the program in 1965 the whole population in the country will have been vaccinated, and that smallpox will no longer exist.

TABLE 22. ACHIEVEMENTS OF SMALLPOX ERADICATION PROGRAM, 1961-1963.

Year	Provinces Provided Services	Population in these Provinces	Population Vaccinated	Percentage
1961	17	8,501,700	4,753,678	55.91
1962	26	10,058,718	6,780,115	67.41
1963	28	7,820,491	6,712,643	85.83

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*, pp. 226-227.

6.0.

2.10 Cholera.

Cholera has occurred only occasionally, as shown in Table 23.

TABLE 23. NUMBER OF DEATHS FROM CHOLERA, 1948-1962.

Year	Cases	Deaths
1948	33	15
1949	9	1
1950	—	—
1951	1	—
1952	—	—
1953	—	—
1954	—	—
1955	—	—
1956	—	—
1957	—	—
1958	11,582	1,747
1959	7,777	625
1960	—	—
1961	—	—
1962	—	—

Source: Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, Bangkok, Thailand, p. 30.

There was an interval as long as six years without a single case of cholera before it broke out again in 1958 and 1959. Then in 18 months time there were 19,359 patients out of which 2,372 died. The mortality rate was 12 per cent of those afflicted, which was considered low when compared to 60 to 70 per cent as it used to be.

In 1963 there was an outbreak of cholera in a southern province, and later this spread to 20 other provinces, including the area of Bangkok and Dhonburi. Out of 1,724 patients, 141 died. However, successful control was established in a short time.

Since cholera still occurs in many neighboring countries such as Indonesia, the Philippines and India, vaccinations for the whole population are provided regularly every six months.

2.11 Plague.

Up to 1963 plague had not occurred in Thailand for 11 years.¹⁸ However, there are frequent outbreaks of the disease in Burma. Therefore, the plague control units in the rural areas still carry out work, exterminating the carriers (pests) as well as instituting other preventive measures.

¹⁸Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*, p. 221.

2.12 Rabies.

Deaths from rabies are indicated in Table 24,

TABLE 24. NUMBER OF DEATHS FROM RABIES, 1951-1961.

Year	Persons Vaccinated	Deaths
1951	12,353	187
1952	14,184	216
1953	15,905	227
1954	22,667	278
1955	24,971	272
1956	24,221	237
1957	21,563	336
1958	25,991	227
1959	27,835	245
1960	27,527	214
1961	24,264	208

Source: Ministry of Public Health, *Public Health in Thailand* B.E. 2506 Bangkok, Thailand, p. 32.

It can be seen that each year about 25,000 people were vaccinated against rabies, and about 200 people died. The number of deaths rated as high as 6.7 per 100,000 population. Rabies is, therefore, considered an important public health problem.

It is difficult to get rid of stray dogs since Thailand is a Buddhist country where killing is opposed by the majority of people. The Rabies Control Act which requires owners of dogs to have their pets vaccinated has helped some to reduce the incidence of rabies. However, the Act has not been as strictly observed as it should be; had it been, the number of deaths from rabies would have been much lower.

2.13 Anthrax and trichinosis.

There were three outbreaks of anthrax in 1962; out of 72 patients, 10 died. In 1963, sixty patients were reported, out of which seven died.¹⁹ The control of the disease has been carried out mainly by vaccinating cattle and by advising people not to eat uncooked meat.

The first recognized outbreak of trichinosis occurred in 1962 in a northwestern district close to Burma. Eleven patients out of 56 died, and in 1963 there were 12 deaths out of 88 patients in the northern mountainous areas.²⁰ A team of health officers and veterinarians was sent to the location and preventive measures were effected in a manner similar to the case of anthrax.

¹⁹ *Ibid.*, p. 33.

²⁰ *Ibid.*, p. 33.

3. PROMOTION OF HEALTH

As far as promotion of health is concerned, the Ministry of Public Health needs close cooperation from other ministries such as the Ministries of Education, Interior, National Development, Agriculture, Industry, and Communication.

Taking note of the ratios of 1 physician per 800 persons in Bangkok-Dhonburi and 1 per 25,000 in the provinces, the Ministry of Public Health is aware that rural health services are still poor. Therefore, in efforts to promote national health conditions a primary emphasis is placed on the rural health situation. There are, at present, several health promotion projects, for example, rural health improvement project, maternal and child health project, nutrition project, and health education project.

3.1 Rural health improvement project.

The surveys on causes of illness of the rural people revealed that there was a high incidence of the diseases of the digestive system such as typhoid, dysentery, and parasitic diseases of various kinds. Of the population of 800 in a certain village, there were 20 cases of dysentery, 30 of diarrhoea, and 400 of parasitic diseases.²¹ In this village there was no uncontaminated source of water nor were there any sanitary latrines.

Judging from the conditions of living in the rural areas, a major cause of the aforementioned diseases is uncleanliness or poor sanitation, which is partly the result of inadequate knowledge and/or of lack of material resources to improve conditions. Therefore, the major objective of rural health improvement is the control of the diseases associated with poor sanitation through the provision of uncontaminated sources of water and sanitary latrines, and also through maintenance of cleanliness in the households.

In 1952, several pilot projects were organized with the assistance of USOM: projects on the control of parasitic diseases, and environmental sanitation improvement. At the termination of these, the village health and sanitation project was operated from 1957 to 1959; and after that in 1960, the 15-year rural health improvement project was started. To achieve the ultimate goal in improving village sanitation, the work undertaken in the project has been along the following lines:

a. The academic help consists of the training of provincial health officers in rural health and sanitation improvement, so that they are able to conduct such work in the villages. The personnel training began first in the northeastern region and

²¹ Mali Thainua, "Rural Health Improvement," *Report on Rural Health Development Conference*, B.E. 2505, p. 45.

later expanded to the southern, northern, and central regions. By 1963 the provincial health officers all over the country had been trained.

b. The material aid includes the provision of educational materials and sanitation equipment, and also vehicles for use in field work of the officers.

c. Economic assistance is also given; e.g. inexpensive but sanitary latrine bowls are made for sale to the village people and money is also spent in helping to establish uncontaminated sources of water in the villages.

Another kind of assistance which should be considered very important, because it emphasizes preventive aspects, is health education. The village people, through the efforts of officials conducting the rural health development projects, are enabled

TABLE 25. ACHIEVEMENTS OF RURAL HEALTH IMPROVEMENT PROJECT, 1960-1963.

Region	No. of Provinces	Total No. of villages	1960	1961	1962	1963
Improved Villages						
Northeastern	15	14,964	334	624	806	1,439 *
Southern	14	5,436	—	123	271	621
Northern	16	7,756	—	—	264	394
Central	24	11,826	—	—	366	575
Total	69	39,982	334	747	1,707	3,029
Uncontaminated Sources of Water						
Northeastern	15	14,964	227	480	739	937
Southern	14	5,436	—	257	454	532
Northern	16	7,756	—	—	231	419
Central	24	11,826	—	—	1,121	1,373
Total	69	39,982	227	737	2,545	3,261
Sanitary Latrines						
Northeastern	15	14,964	6,513	11,799	18,302	27,070
Southern	14	5,436	—	966	3,983	7,180
Northern	16	7,756	—	—	11,831	17,998
Central	24	11,826	—	—	9,602	12,767
Total	69	39,982	6,513	12,765	43,718	65,015

Source: Department of Health, Ministry of Public Health, *Annual Report, B.E. 2506*, p. 132.

* Figures for this row are accumulated for the 4-year period.

to see the importance of maintaining sanitary conditions in their living areas—particularly through use of uncontaminated water and suitable latrine facilities.

However, the objectives of the rural health improvement project cannot easily be realized. It may take a considerably long time to achieve widespread success, since problems such as providing an adequate supply of uncontaminated drinking water as well as water for other purposes do not permit easy solutions.

From its beginning in 1960 until 1963, the rural health improvement project succeeded in improving the living conditions in 3,029 of the nation's 39,982 villages, in constructing 4,161 uncontaminated sources of water including pools, tanks and village water supplies not included in Table 25—and in establishing 65,015 sanitary latrines. See Table 25 for details.

Though the number of improved villages is as low as 7.6 percent of the total number, the annual increase has been very high, being 123 per cent and 128 per cent in 1961 and 1962, respectively.

It can be stated that the project has yielded satisfactory results. In addition, the village people have been provided with other health services, such as school health, maternal and child health, and control of communicable diseases; and, as a side benefit, the village people have been learning to help themselves and to work as a group, because the sanitation improvement program is planned for, and by themselves. Moreover, they learn to intergrate their efforts in supporting several development projects which focus on various specific objectives.

Still another project of a preventive nature is the rural teacher training project, administered by the Department of Teacher Training, the Ministry of Education. This project is valuable in that not only do the students become better prepared to promote improvements in their communities, but the rural teacher training institutions themselves influence rural people toward greater awareness and acceptance of advances in education, health and agriculture. The Ministry of Education has placed increased emphasis on health education courses in the curricula at all levels of education—elementary, secondary and teacher training. Section 3.5 discusses this matter in details.

3.2 Maternal and Child Health Project.

The maternal and child health project was organized for the purpose of reducing the death rate of mothers and babies. Fifty years ago the death rate of infants less than one year of age was as high as 300 per 1,000 lives, but in the past 25 years the rate has decreased from 104.2 in 1937 to 44.7 in 1962.

The death rate of mothers in childbirth also has been reduced from 8.2 per 1,000 live births in 1937 to 3.7 in 1962, and the rate of stillbirths has decreased from 3.8 per 1,000 live births to 1.9 in the same period.

Apart from providing direct services to infants, children, and pregnant women, the maternal and child health project also involves the education of mothers and unmarried women on relevant topics. Expectant mothers are given advice in groups as well as individuals. The advice concerns mostly how they should take care of themselves during the period of pregnancy and puerperium with respect to preparation and consumption of nutritious foods, obtaining sufficient rest and exercise, and the care of infants. The instruction given to unmarried women is concerned primarily with preparation for married life—how to be a good housewife and mother.

Although the provision of such services is still fairly limited, government and private organizations have shown increasing interest in this type of social service. Therefore it is hoped that the services will soon be offered to a wider extent.

TABLE 26. ACHIEVEMENT OF MATERNAL AND CHILD HEALTH PROJECT, 1960–1963.

Number	1960	1961	1962	1963
Pre-natal				
Expectant mothers registered	112,352	118,764	127,048	150,248
Home visits	120,083	128,793	139,619	155,714
Expectant mothers examined	172,709	155,728	176,421	203,763
Child deliveries	70,467	62,887	64,152	67,017
Post-natal				
Families visited	165,096	171,962	182,624	250,258
Visits to mothers and babies	349,633	411,842	452,307	526,455
Visits to babies (6 weeks to one year)	192,647	238,320	274,704	356,347
Preschool				
Children less than 1 year attending the centers	77,351	99,199	129,902	146,098
Examinations of children less than 1 year at the centers	87,263	116,981	158,000	180,669
Preschool children attending the centers	96,225	114,071	163,123	202,030
Examinations of preschool children at the centers	103,796	131,473	196,632	239,112

Source : Division of Vital Statistics, Ministry of Public Health, *Public Health Statistics*, p. 93.

As recorded above, from 1960 to 1963 services of the maternal and child health project have been greatly expanded.

3.2.1 Maternal and Child Health Centers in Bangkok and Chiengmai.

These two maternal and child health centers have been established to be the models for all other centers. The aim is also to facilitate the training of health personnel—particularly student midwives and nurses. In addition, these two centers provide other health services for all people: for instance, services for the control and prevention of diseases, sanitation improvement, and school health.

3.2.2 Central Maternal and Child Health Center.

This center was established in 1955, and its work has involved tuberculosis and leprosy control as well as its primary function. It is the purpose of the center to take care of preschool children whose parents are in trouble, either because of social problems or because they are victims of these diseases. The center also provides training for student midwives and nurses. Moreover, it serves as a model center under the Project.

3.2.3 Mobile Maternal and Child Health Units.

These units have been in service since 1950 primarily to help mothers and children in isolated areas, although they also provide general medical and health services for all people. In 1963 there were three units operating in different areas. The services provided by the mobile units have been greatly appreciated by the rural people. However, the amount of work which has been carried out is limited, due to the inadequate transportation, shortage of personnel, and insufficiency of the budget.

3.2.4 The Nursing Scholarship Project.

This is a 6-year project, lasting from 1961 to 1966, for the purpose of producing a sufficient number of nurses and midwives to be assigned to every health center in the country, principally to take care of the rural health situation. (For details, see section 5.2.3 on Medical and Health Services.)

3.2.5 Training Course for Indigenous Midwives.

To assure greater safety for mothers and babies, especially in the rural areas, the training course of the indigenous midwives project was organized in 1957. It is a 10-year project, and from the beginning until 1961, 11,012 indigenous midwives have been trained. (For further details, see the section on Training of Medical and Health Personnel.)

3.2.6 Health and Midwifery Center Improvement Project.

This project was started in 1953, aimed at the improvement and expansion of the health and midwifery centers. It is planned that there will be one first-class health center, staffed with one doctor and other health officers, in every district and subdistrict all over the country, and one second-class health center or midwifery center in every village.

These various centers under the maternal and child health project render services for general health, as well. There is no sharp demarcation between maternal and child health, and general health; both objectives are intended to promote the overall health condition of the nation.

3.3 School Health Project.

School health services were initiated in 1925 by the Ministry of Education with the assistance of the Thai Red Cross. The Ministry of Public Health took over this responsibility in 1942, the year in which it was founded.

The objective of the school health project is to promote better health of school children, including the formation of the right attitudes toward good health and hygiene so that they may grow up to be healthy adults. The work undertaken through the project consists of:

- a. Control of communicable diseases in schools by means of vaccinations and inoculations.
- b. Physical examination of school children, curative treatment to the sick, and advice on the maintenance of good health.
- c. Control of school sanitation.
- d. Dental services.
- e. Such activities as advice on first aid, prevention of accidents, and organization of the school lunch program.

TABLE 27. ACHIEVEMENTS OF PROVINCIAL SCHOOL HEALTH PROJECT, 1960-1963.

Number	1960	1961	1962	1963
Schools visited	12,406	17,201	16,843	18,931
Visits to schools	17,501	26,808	24,196	27,647
Students examined	1,444,216	2,207,458	2,256,941	2,568,886
Students treated and advised	5,346	82,726	92,909	128,924

Source: Division of Vital Statistics, Ministry of Public Health, *Public Health Statistics*, p. 94.

The achievements of the school health project from 1960 to 1963 may be seen in table 27.

Though the work under the project is still limited, the increase in the extent of the services provided, as shown in Table 27, is promising.

3.3.1 Central School Health Services.

Teams of doctors and nurses are assigned to visit schools in Bangkok and Dhonburi to provide medical and health services for the school children. A central health clinic is also organized at the Division of School Health in the Department of Health to take care of the children referred to the Clinic by teachers or parents.

In 1962, 184 schools with a total number of 163,840 students in the central area were provided health services by the School Health Division. Five doctors and 17 nurses were assigned, amounting to an average of one doctor to 37 schools and 30,000 students, and 1 nurse to 11 schools and 10,000 students.²²

3.3.2 Provincial School Health Services.

In 1962 there were altogether seven school health service units, each of which was staffed with one doctor, one dental hygienist, and one to three nurses.²³ Since there is a limit to the services which can be provided by this small number of staff, the operation has consisted mainly of the training of health officers and teachers so that they will be able to render services to school children as much as possible.

3.3.3 Dental Services.

It has been discovered that about 80 per cent of school children have dental defects. Dental services are provided at the Central Clinic at the Division of School Health, and mobile units are sent to primary schools where there are small children who cannot attend the Central Clinic or elsewhere. For secondary school students, services are located at certain schools where the students from other schools nearby can come and attend. There are altogether 18 dental service units, and in 1962 more than 25,000 students had dental examinations and 18,000 students were treated.²⁴

²² Department of Health, *Annual Report ...*, *op. cit.*, p. 139.

²³ Ministry of Public Health, *Public Health...*, *op. cit.*, pp. 40.

²⁴ Ministry of Public Health, *Public Health...*, *op. cit.*, pp. 40-41.

3.3.4 School Health Committees.

In 1951 the Ministry School Health Committee was organized, the members of which represent several ministries, such as the ministries of Public Health, Education, Interior, and Agriculture. At present there are also school health committees at the departmental level. All these committees work together in promoting the health of school children. The present school health improvement project, which will last from 1964 to 1966, which aims to increase school health units by twelve and dental service units by 5–15 each year, and which will train dental hygienists, is expected to make the services for school health more nearly adequate.²⁵

3.4 Nutrition.

In 1960 the Department of Health, with the cooperation of ICNND of the United States, undertook a study on health and nutrition of Thai civilians and military personnel. The survey was conducted in some selected areas in all regions of the country. Some major findings were as follows (for more details, see the report on Nutrition):

- a. Nutritional deficiency was prevalent among the people of the selected groups.
- b. The average intake of riboflavin was very low, and that of thiamine, iron, and calcium was also insufficient.
- c. A high incidence of fluorosis was found in most areas except Bangkok.

In order to prevent nutritional deficiency diseases among the Thai people, a National Nutrition Committee, consisting of many subcommittees and representing various ministries concerned, was organized. The aim of the Committee is primarily to educate the people on nutritive values of foods and proper selection for a balanced diet.

3.4.1 Rural Nutrition Extension Project at Ubon Rajthani.

This pilot project was organized in 1961 through the cooperation of several ministries, FAO, WHO and UNICEF, in an attempt to fight food deficiency diseases and to raise the nutritional status of the rural population. The experimental project was undertaken at 10 villages in Ubon Rajthani, the operation consisting of:

- a. Training of various kinds of personnel.
- b. Physical examination of children from less than one year to 15 years, of pregnant women, and of nursing mothers.

²⁵ Department of Health, *Annual Report...*, op. cit., p. 140.

- c. Investigation of the nutritional status of the people in those ten villages,
- d. Blood and urine analysis,
- e. Nutrition education and demonstration.

The project has yielded satisfactory results: a number of teachers and housewives have been trained, pregnant women and nursing mothers have been provided more nourishing food, cleanliness in the households has been promoted, and children have learned to eat more varieties of food.

3.4.2 Goiter Control Project.

Through the technical assistance of WHO, UNICEF, and FAO this project was set up in 1962 in Prae province, where the incidence of goiter has been found to be as high as 84.4 per cent.²⁶

The main objective of the project is to study the effectiveness of goiter control by salt iodization. One salt iodization plant was established at Denchai in Prae, where a sufficient amount of iodized salt is produced for the consumption of the people in Nan province as well as in Prae. In addition, research studies concerning the iodization procedures and the side effects of the consumption of this salt are being made.

3.4.3 Shark Liver Oil Production Project.

A shark liver oil plant was established in 1959 to encourage wider use of shark liver oil as a source of Vitamins A and D. By 1962, eleven million capsules of liver oil had been produced²⁷ for distribution to children, pregnant women, nursing mothers, and sick people through the health and midwifery centers all over the country.

3.4.3 School Nutrition Program.

In 1962 questionnaires on the school lunch program were sent to schools throughout the country in order to find out about the nutritional conditions. The replies are being used as a basis for planning the school nutritional program in the future.

During the year under review, a group of students was selected for trial on a low-cost lunch, prepared according to the standard menu suggested by the

²⁶ Department of Health, *Health Progress...*, op. cit., p. 63

²⁷ *Ibid.*, p. 63.

Nutrition Division. This seven-month trial resulted in a much better nutritional status of this selected group. In addition, the Nutrition Division has taken certain steps to promote better nutrition, such as:

- a. Distribution to schools of a suggested lunch menu of low cost but of high food value.
- b. Dissemination of knowledge about nutrition among the general public by means of mass communications.
- c. Analysis of Thai foods and investigation of ways in which the native dishes can be made more nutritious.

Several private organizations such as the Home Economics Association of Thailand, the YWCA, and other commercial associations have taken steps to promote the nutritional status of the people as a whole. Therefore, it is hoped that the Thai people will be well equipped with knowledge of nutrition, and as a result, nutritional maladjustment will no longer be a major cause of death of Thai children less than one year of age.

However, success in the nutritional development project depends largely on agricultural promotion. Especially in poor rural districts, the people usually cannot afford to buy food of high nutritive value; this means that support for growing sufficient amounts of nutritive food products within the community has to be provided. Concurrently the people themselves have to be educated to see the value of nutritious foods and persuaded to get in the habit of consuming such food.

3.5 Health Education in Schools.

The school curricula provide an emphasis on the furtherance of good health as well as academic knowledge and on good morals. One of the objectives of elementary education is "to provide preliminary knowledge on health and hygiene, to learn to take care of one's own health, and to help in promoting the public health"²⁸ and an objective of secondary education is "to create one's sound health, physically and mentally, and to help in promoting the public health"²⁹. It therefore can be stated that health education is a required subject in the curriculum of both elementary and secondary education.

3.5.1 Elementry Education Level:

At the elementary level, health education is constituted by a physical health course which aims to promote the health and hygiene of school children. Of the

²⁸ Ministry of Education, *Curriculum of Elementary Education B.E. 2503.*

²⁹ *Ibid.*

total 30 class hours per week, two are devoted to this health course—that is, about 7 per cent of the class time. The topics covered in health education are as follows:

- a. Formation of health habits
- b. Food and food values
- c. Cleanliness
- d. Physical exercises
- e. Control of diseases
- f. Knowledge of first aid

3.5.2 Secondary Education level.

At the secondary level, health education takes two hours of the total 30 class hours weekly in the general stream, and one hour in the vocational stream. The courses in health education follows more or less the same pattern as at the elementary level, but it is more extensive. For example, these are the topics covered:

- a. Nutrition,
- b. Physiological system,
- c. Communicable diseases, and
- d. Addictive drugs.

3.5.3 Teacher Training Level.

At the teacher training level, health education is even more extensive. In the 1959 syllabus of teacher training at the lower level health education includes three courses, amounting to two hours a week for the three month school term. These courses are: personal and public health, welfare education, and school health planning. In addition, several courses in home economics may be regarded as parts of health education; for example, the courses on food and food values, and nutritional problems in Thailand.

According to 1962 syllabus for teacher training at the higher level, health education includes a course on personal health (two hours a week for a term), and a course on the preparation of nutritious foods (also for two hours a week for a term) is included in home economics.

There is still another aspect of teacher training which can be regarded as a great help in rural health improvement, this being the rural teacher training project, initiated by the Department of Teacher Training for the purpose of preparing teachers for work in rural areas. The project was started in the north-eastern region. As the results were very satisfactory, the program has been

extended to the northern, southern, and central regions as well. At present, 26 teacher training institutions in 17 provinces are included in the project. The trainees in these institutions do their practice teaching with 27,000 students in 166 schools located in 250 villages, the total population of which is 190,000.³⁰

In the period of three months during which these teacher trainees practise their teaching in the village schools, they have an opportunity to work closely with the village people, not only in academic lines but also in other lines such as sanitation improvement, general health, agriculture, and social welfare.

It may be stated, therefore, that the Ministry of Education is greatly aware of the potential for creating a strong manpower base of school children. It thus shares some of the responsibility with the Ministry of Public Health in this line of work. However, in order to attain satisfactory results consideration should be given to the knowledge of the teachers, the instructional methods and materials, and to whether the students practise good health care of themselves according to the objectives of the curricula.

³⁰ *The Department of Teacher Training: Its Work and Organization*. the Department, Bangkok, pp. 4-5.

4. MEDICAL AND HEALTH SERVICES

As has been the practice for a long time, medical and health services are supported by many organizations—governmental, charitable, and private. The Ministry of Public Health is the main institution directly responsible for the health condition of the country. The appropriations allotted to this Ministry for carrying out its functions in the last ten years are as shown in Table 28.

TABLE 28. BUDGET APPROPRIATED TO THE MINISTRY OF PUBLIC HEALTH, 1955–1964.

Year	Baht
1955	86,528,496
1956	86,781,637
1957	87,942,895
1958	160,098,810
1959	289,868,251
1960	219,450,471
1961*	177,445,488
1962	274,124,500
1963	324,665,600
1964	398,823,800

*The fiscal year of 1961 consisted of 9 months only.

Source: Division of Finance, Ministry of Public Health.

The figures in Table 28 indicate that there was an increase in the amount of the appropriation in almost every year. Only in 1960 and 1961 was a slight decrease recorded. The average annual increase in the last ten years was 34,588,367.11 baht.

In addition, international organizations such as UNICEF, WHO and AID have given considerable assistance for the improvement of health conditions. From 1950 through 1961 UNICEF allocated about 3,694,000 dollars. The aid provided by WHO and AID has also amounted to a large sum of money.

4.1 Hospitals.

Under the jurisdiction of the Ministry of Public Health there are a number of hospitals, health centers, doctors and nurses. Some other ministries also provide medical services, initially intended only for the officials—including families and relatives—under their control. But, it appears, the services now are given to all. Under the Ministry of Defense there are Army, Navy and Air Force

Hospitals. The Ministry of Interior has jurisdiction over the Police Hospital. The Ministry of National Development is responsible for the Department of Irrigation Hospital, and the Ministry of Communication, for the Railways Hospital. Furthermore, there are two big hospitals—Siriraj Hospital and Chulalongkorn Hospital under the supervision of the Office of the Prime Minister. These two hospitals not only provide medical services but also have medical schools for doctors and nurses. There are also a number of semi-governmental, charitable, and private hospitals. All these medical centers carry out their work with the principal aim of making the Thai people healthy, physically and mentally. They promote the common hope that Thai children may grow up to be healthy adults, so that they can contribute a great deal to the development of the country.

There are altogether 195 hospitals in Thailand. The Ministry of Public Health maintains 86 general hospitals, seven mental hospitals, one tuberculosis hospital, two leprosaria, one hospital of infectious diseases, and one hospital for addicts. Twenty-five hospitals are maintained by other ministries; 21 hospitals are maintained by charitable organizations; and 51 hospitals are private.

The Department of Health, the Ministry of Public Health, maintains 859 health centers, of which 158 are first-class (104 governmental and 54 municipal) and 701 are second-class (698 governmental and 3 municipal). The Department also maintains 1,071 midwifery centers. Each first-class health center is staffed by at least one doctor, one nurse-midwife, two sanitarians, and one auxiliary midwife. There are also facilities to the extent of about 10-15 beds. The staff of the second-class health center usually consists of one sanitarian and one auxiliary midwife; and that of the midwifery center, of only one auxiliary midwife.

The Department of Health also maintains 200 other centers for specific medical and health services, for instance, maternal and child health, health education, communicable disease control, malaria eradication, etc.

4.1.1 General Hospitals in Bangkok.

Of the 86 general hospitals under the supervision of the Department of Medical Services, the Ministry of Public Health, four are located in Bangkok and 82 in the provinces.

In Bangkok there are Women's Hospital, Children's Hospital, Buddhist Priest's Hospital and Lerd-Sinn Hospital.

Women's Hospital was founded in 1949. In 1954 the section for children was over-crowded and had to be expanded, and thus another hospital, Children's Hospital, was established. In 1962 Women's and Children's Hospitals provided services for 275,000 mothers and babies. Of these, 50,000 were inpatients. About 15,000 babies were delivered. About 1,200 beds, including 300 beds for mothers,

are available.³¹ These two hospitals also serve as training institutions for nurses and, moreover, provide a postgraduate course in nursing.

Buddhist Priests' Hospital also was founded in 1949. The services are exclusively for Buddhist priests. Every year since its founding about 3,600 priests have been admitted as inpatients and about 52,000 have come for treatment as outpatients. In 1963 there were 56,432 patients, of whom 3,827 were inpatients. As of 1963, 225 beds were available.³²

Lerd-Sinn Hospital was established in 1957 through a private donation. The number of beds in this hospital increased from 50 in its first year of operation to 250 in 1963. In that same year there were about 44,000 patients, of whom 400 were inpatients.³³

4.1.2 General Provincial Hospitals.

Eighty-two provincial hospitals are located all over the country, one in each province and heavily-populated district. The number of provincial hospitals has increased considerably. During the period of nine years from 1953 to 1962 there was an increase of 47 hospitals, that is, an increase from 35 hospitals in 1953 to 82 hospitals in 1962. The number of beds also more than doubled, from 2,512 in 1953 to 7,181 in 1962.³⁴ This indicates that the Government has taken great strides in promoting better health conditions in the rural areas.

The staffs of the provincial hospitals cooperate closely with those of the health centers in providing medical and health services to the people in the provinces all over the country.

4.1.3 Mental Hospitals.

Of the seven mental hospitals, four are located in the city and suburban areas and the other three are in the provinces.

Three mental hospitals in the city and suburban areas provide services for adults. They are Somdej Chao phya Hospital at Dhonburi, Sri Thanya Hospital at Nondhaburi, and Prasat Hospital in Bangkok. In Bangkok, there is also a mental hospital for children—that is, the Institution for the Mentally Defective, or Panya Aun Hospital. The three provincial mental hospitals are located at different regions of the country, one at Chiengmai and the others at Ubol Rajthani and

³¹ Ministry of Public Health, *Public Health*... pp. 45-49.

³² *Ibid.*

³³ *Ibid.*

³⁴ *Ibid.*

at Surat Thani. These three provincial mental hospitals provide care for both adults and children.

Medical services for the mental and nervous disorders can be dated back to the period of King Chulalongkorn, the fifth King of Thailand. Somdej Chao Phya Hospital was founded in 1889 and was the only mental hospital in the country for 47 years before the establishment of the second mental hospital in 1937 at Surat Thani. After that the five other mental hospitals came into existence—Sri Thanya in 1941, the hospitals at Chiengmai and at Ubon Rajthani in 1947, Prasat Hospital in 1957, and the Institution for the Mentally Defective in 1960.³⁵

In 1963 there were altogether 67,159 patients with mental and nervous disorders, 55,117 being outpatients and 12,042, inpatients. Of this total number, 53,949 were under treatment at the hospitals in the city and suburban areas, and 13,210 were treated in the provincial mental hospitals. The total number of beds is the seven mental and neurological hospitals was 5,435.³⁶

The findings of the 1957 survey on the incidence of mental retardation conducted by the Thai Government with the assistance of WHO revealed that there were at least 250,000 mentally deficient persons in Thailand, or about one per cent of the total population. It was agreed that there should be some kind of services for these people, and, therefore, the Institution for the Mentally Defective was founded in 1960. This hospital provides services for children between the ages of 2-18 years. In its first year of work it had only 79 patients, but in the succeeding years more and more children have come for medical attention and treatments. In 1963 there were altogether 2,050 patients—199 inpatients and 1,851 outpatients.³⁷ The increase in the number of patients suggests that there should be an expansion in this branch of work.

The preventive aspect of a mental health program also has been taken into consideration. The first Child Guidance Clinic was organized in 1953 at Somdej Chao Phya Hospital in Dhonburi for the purpose of serving children with psychotic and emotional problems. Children who have come for treatment are those in the age-group of 2-15 years. As the services of the Clinic have been used by more and more children, a second Child Guidance Clinic has been organized in Bangkok at Rajdamnern Avenue. The number of children coming for guidance increased from 974 in 1956 to 2,504 in 1963. All of these children were seen as outpatients.³⁸

³⁵ Department of Medical Services, Ministry of Public Health, *Annual Report, B.E. 2504*, pp. 95-138.

³⁶ Division of Mental Health, Department of Medical Services, Ministry of Public Health.

³⁷ *Ibid.*

³⁸ *Ibid.*

Attempts have also been made to promote the mental health of the people as a whole. This is done by means of public lectures and discussion by doctors or by others specialized in the field.

4.2 Hospital beds.

In the hospitals and health centers all over the country there are approximately 20,000 beds, or an average of one hospital bed to about 1,500 of population. This over-all average is misleading, however, since in Bangkok-Dhonburi there is one hospital bed for 200 people, while in the rest of the country there is one hospital bed for 2,400 people.³⁹ This is a rather unfavorable hospital bed-population ratio, since, for example, in Singapore there is an average of one hospital bed for 600 people.⁴⁰

TABLE 29. NUMBER OF REGISTERED FIRST-CLASS PRACTITIONERS IN THE MODERN ARTS OF HEALING, 1955-1964.

Year	Medicine	Dentistry	Pharmacy	Nurse-Midwifery	Midwifery	Practical Nursing
1955	2,372	159	557	2,791	—	4,080
1956	2,576	171	599	2,081	—	4,159
1957	2,774	203	649	3,458	—	4,227
1958	3,018	213	739	3,914	138	4,295
1959	3,093	231	809	4,158	214	4,362
1960	3,338	241	829	4,524	304	4,435
1961	3,401	267	952	4,969	385	4,579
1962	3,546	302	1,014	5,298	480	4,673
1963	3,783	335	1,108	5,467	716	4,751
1964	4,027	373	1,185	5,821	970	4,924
Average increase per year	183.9	23.8	57.5	336.9	68.7	90.4

Remarks: The numbers shown are recorded at the end of June every year.

Source: Division of Medical Registration, Ministry of Public Health.

³⁹ Ministry of Public Health, *Public Health . . . , op. cit.*, pp. 2-3.

⁴⁰ Sangsingkao, Phon, "Population Trend and Public Health Problem" *Seminar on Population Trend in Thailand, B.E. 2506*. National Research Bureau, pp. 213-215.

4.3 Medical and Health Personnel.

Medical and health practitioners in Thailand can be classified into three groups: the first-class and the second-class practitioners in the modern arts of healing, and the indigenous practitioners. In each class there are several fields of specialization; for instance, medicine, dentistry, pharmacy, nursing, and midwifery.

Tables 29 and 30 show the number of practitioners registered at the Medical Registration Division, the Ministry of Public Health, in the period of 1955-1964.

TABLE 30. NUMBER OF REGISTERED SECOND-CLASS PRACTITIONERS IN THE MODERN ARTS OF HEALING AND NUMBER OF INDIGENOUS PRACTITIONERS, 1955-1964.

Year	Second-class Practitioners				Indigenous Practitioners		
	Medicine	Dentistry	Pharmacy	Midwifery	Medicine	Pharmacy	Midwifery
1955	637	732	319	1,491	34,094	11,352	8,503
1956	637	735	319	1,667	34,188	11,682	8,492
1957	637	766	319	1,824	34,251	12,036	8,503
1958	736	788	319	2,105	34,277	12,290	8,506
1959	627	819	315	2,251	33,899	12,409	8,436
1960	627	845	315	2,412	33,904	12,470	8,443
1961	626	878	306	2,490	33,901	12,504	8,496
1962	626	880	306	2,575	33,903	12,801	8,447
1963	625	880	306	2,714	33,898	12,794	8,447
1964	625	880	306	2,915	33,896	13,049	8,456
Average increase per year	-1.3	15.3	-1.4	158.1	-42.9	188.6	-5.2

Remarks: The numbers shown are recorded at the end of June every year.

Source: Division of Medical Registration, Ministry of Public Health.

Table 29 shows that there was an increase of registered first-class practitioners in the modern arts of healing every year.

Table 30 reveals that there are still a great number of indigenous practitioners. These indigenous practitioners outnumbered both the first-class and second-class practitioners in the modern arts of healing. Although there was an annual increase only in the field of pharmacy, this increase of 188.6 was high, being the second highest of the average increases in all fields of the several classes. This may be interpreted to mean that Thai people still seek services from the indigenous practitioners to a great extent.

As long as there is an effort to promote the health conditions of the country, there should not be any increase in the number of the indigenous practitioners. On the contrary, there should be a great increase in every field of the first-class practitioners in the modern arts of healing, so that there will be enough highly qualified staff in medical and health centers all over the country to provide services for all people.

As for the second-class practitioners of the modern arts of healing, an increase in the specialized field of midwifery should be encouraged, since there is still a need for such personnel in the rural maternal and child health programs.

4.3.1 The Physician-Hospital Ratio.

In 1963 there were about 3,800 physicians in Thailand, or an average of one doctor to about 8,000 population.⁴¹ In Bangkok, however, there was one doctor for 800 persons, while there was one for about 25,000 in the rest of the country.⁴² Considering the recommended international ratio of one doctor to 800 persons⁴³, the doctor-population ratio in Thailand is still very unfavorable.

4.3.2 The Nurse-Population Ratio.

The number of nurses (nurse-midwives, midwives and practical nurses) in the country is about 10,000, or an average of one nurse to about 3,000 population. This is also an unfavorable ratio because, according to the recommended international nurse-population ratio there should be one nurse to every 400 persons.⁴⁴

It may be concluded that medical and health services in Thailand still need to be extended considerably. There are shortages in number of hospitals, hospital beds, doctors, and nurses. Though the figures in Table 29 show that the average annual increase of registered doctors was 7.75 per cent and that of the registered nurse-midwives was 12.06 per cent, considering the 3 per cent annual increase of the population, the doctor-population and nurse-population ratios of Thailand are still far from satisfactory. Thailand has to produce a great number of doctors and nurses within a short time.

⁴¹ Calculated from the population number of 30,020,000.

⁴² Ministry of Public Health, *Public Health* . . , *op. cit.*, p. 2.

⁴³ Sangsingkao, Phon, "Population . . , *op. cit.*, pp. 213-215.

⁴⁴ *Ibid.*

5. TRAINING OF MEDICAL AND HEALTH PERSONNEL

There are, at present, three medical schools in Thailand—namely, Siriraj Hospital Medical School, Chulalongkorn Hospital Medical School, and the Medical School at Chiengmai. All these three are under control of the University of Medical Sciences, which is in turn under supervision of the office of the Prime Minister.

The Siriraj Medical School was founded in the reign of King Rama V in 1889 as the first medical school in the country. Although small at first, its activities grew in number as time went by. Owing to a greater demand for physicians, a new medical school was established in 1947 at Chulalongkorn Hospital, and in 1959 another one was established at Chiengmai with the support of AID.

5.1 University of Medical Sciences.

The university of Medical Sciences is the educational institution responsible for establishing levels of qualification and for certifying competency of medical and health personnel who specialize in such lines as medicine, dentistry, pharmacy, public health, sanitation, medical technology, medical sciences, and nurses-midwifery.

The statistical data on graduates from the University in various fields is shown in Tables 31 and 32.

The record of the number of graduates from the University of Medical Sciences within the last seven years, between 1957 and 1963, may be studied along three lines:

The number of graduates. The number for each year did not vary much; in some years it increased while in others it decreased. In 1963 the first group of graduates from the Chiengmai Medical School made the increase the highest ever.

Fields of specialization offered. In the course of these seven years three more fields of specialization were offered. In 1960 there were graduates in the specialty of Tropical Medicine, and in 1963 graduates in Medical Technology and in Medical Sciences.

The educational standard. The standard was raised by broadening the curriculum of some fields of study, and establishing advanced degree programs. For example, the diploma level in the field of nursing was elevated to a Bachelor's degree, since the graduates in this field take a great part in the development of the public health program. The first four graduates in nursing to be awarded a degree graduated in 1958, and the number of degree-recipients increased yearly, reaching 23 in 1963. In addition to this, the University of Medical Sciences offered a post-graduate course in pharmacy which produced the first group of Master's degree graduates in 1961; and the Post-graduate Institute was established.

TABLE 31. NUMBER OF GRADUATES FROM THE UNIVERSITY OF MEDICAL SCIENCES ACCORDING TO THEIR FIELDS OF SPECIALIZATION AND QUALIFICATIONS, 1957-1963.

Specialization	1957		1958		1959		1960			1961			1962			1963									
	M.B.	Dip.	M.B.	Dip.	M.B.	Dip.	M.B.	Dip.	Cert.	M. Ph.	M.B.	Dip.	Cert.	M. Ph.	M.B.	Dip.	Cert.	M.S.	M. Ph.	M.B.	D.p.	Cert.			
Medicine																									
Siriraj Medical School	153	—	118	—	154	—	138	—	—	—	146	—	—	—	158	—	—	—	—	—	127	—	—		
Chulalongkorn Medical School	89	—	75	—	85	—	87	—	—	—	79	—	—	—	74	—	—	—	—	—	79	—	—		
Chiengmai Medical School	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	56	—	—		
Dentistry	8	—	18	—	10	—	26	—	—	—	35	—	—	—	31	—	—	—	—	—	41	—	—		
Dental Health	—	23	—	35	—	24	—	28	—	—	—	5	—	—	—	3	—	—	—	—	—	5	—	—	
Pharmacy	81	—	68	—	23	—	80	—	—	2	90	—	—	—	99	—	—	—	—	—	1	76	—	—	
Public Health	13	—	23	—	18	—	24	—	—	—	25	—	—	—	20	—	—	—	—	—	—	28	—	—	
Public Health Nursing	—	19	—	15	—	23	—	28	—	—	—	31	—	—	—	23	—	—	—	—	—	44	—	—	
Sanitation	—	16	—	21	—	20	—	25	—	—	—	41	—	—	—	34	—	—	—	—	—	11	49	—	
Tropical Medicine	—	—	—	—	—	—	—	—	12	—	—	—	12	—	—	—	12	—	—	—	—	—	14	—	—
Medical Technology	—	21	—	14	—	38	—	30	—	—	—	32	—	—	—	18	—	—	—	—	—	12	27	—	—
Medical Sciences	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	8	—	—	
Nursing	—	—	4	—	7	—	10	—	—	—	21	—	—	—	16	—	—	—	—	—	23	—	—	—	
Nurse-Midwifery	—	80	—	87	—	72	—	88	—	—	—	175	—	—	—	86	—	—	—	—	—	107	—	—	
Postgraduate Institution	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	—	—	—	31	—	—
Total	364	159	306	172	297	177	365	194	12	2	401	284	12	—	398	160	12	13	1	462	240	45	—	—	—

Source. Section of Correspondence Siriraj Hospital Medical School.

Note: M.S. = Master of Science; M. Ph. = Master of Science in Pharmacy
M.B. = Bachelor of Medicine; Dip. = Diploma; Cert. = Certificate

TABLE 32. NUMBER OF GRADUATES FROM THE UNIVERSITY OF MEDICAL SCIENCES ACCORDING TO THEIR QUALIFICATIONS, 1957-1963.

Year	M.S.	M.Ph.	M.B.	Diploma	Certificate
1957	-	-	365	159	-
1958	-	-	306	172	-
1959	-	-	297	127	-
1960	-	-	365	194	12
1961	-	2	401	284	12
1962	-	-	398	160	12
1963	13	1	462	240	45

Source: Section of correspondence, Siriraj Hospital Medical School.

at the Siriraj Hospital Medical School, registering the first group of postgraduates in 1963. Moreover, research projects in various fields of medicine and health were also encouraged.

The improvement efforts of the University of Medical Sciences have yielded satisfactory results in that additional highly trained personnel have been prepared to carry out various fields of work. But the number of graduates, though greater in number in 1963 than in previous years, is still small—especially when it is recalled that there is only one physician per 8,000 population. If the number of physicians is to keep pace with the population increase of 3 per cent a year, and if the health standard of Thailand is to conform to the recommended international standard which allows one physician to 800 population, there must be 62,500 physicians (or 59,000 more than now exist) available within 15 years, since in this time there will be 50 million population in the country. It means that 3,900 physicians should be produced each year. At present only 300 physicians graduate from the three Medical Schools per year. Thus in 15 years time 39 more medical schools must be established,⁴⁵ a prospect which seems impossible to attain.

5.2 Ministry of Public Health.

Some departments in the Ministry of Public Health, as well as the University of Medical Sciences, are given responsibility for training nurses and midwives.

5.2.1 Department of Medical Services.

The Department of Medical Services has established three schools for nurse-midwives with a 4-year course. One is in Bangkok at the Women's Hospital, and the other two are in the rural districts, at the Hospitals in Pisanulok and in

⁴⁵ *Ibid.*, pp. 213-215.

Nakorn Rajsima. The three nurse-midwives schools enroll about 250 students altogether each year (150 at the women's Hospital and 50 each at the other two provincial hospitals). The Department of Medical Services has decided to set up another school of the same kind at Songkhla. Furthermore, the Department is also in charge of the two schools for practical nurses, offering a one-year course. One is affiliated with the Hospital at Ubol Rajthani and the other with the Hospital at Narativat. Each can enroll 50 students a year. Another school for practical nurses is scheduled to be established at Chanthaburi in the future.

The Department of Medical Services is also responsible for the Post-graduate School of Nursing (the former Nursing Teachers School) at the Women's Hospital, which has a one-year program offered only to graduates from nurse-midwife schools and to those who wish to become nurse teachers, nurse supervisors and headnurses. The Post-graduate School of Nursing is scheduled to extend its course of training from one to two years by offering a course of specialization.

5.2.2 Department of Health.

As a part of the maternal and child health program, the Department of Health, the Ministry of Public Health assumes responsibility for training midwives, with the objective of providing at least one midwife for 3,000 population.⁴⁶

There are three midwifery schools: one in Bangkok at Vajira Hospital, and two in the provinces, at Lampang and at Khonkaen Hospitals. About 200-250 candidates enroll at these three schools each year. Most of the students are grantees from their home-towns, trained on the condition that after their graduation they will work at the health centers back home where they will take care of expectant mothers, help with child delivery, look after mothers and babies, as well as giving advice concerning child care.

5.2.3 The Nursing Scholarship Project, Department of Health.

Another project connected with the midwives training program was established and put into operation in 1954. This Nursing Scholarship Project has been incorporated into the National Economic Development Program. The former is a 6-year program intended to operate from 1961 to 1966 for the purpose of promoting a sufficient number of nurses to expand the general framework of nursing services, such as in maternal and child health, school health, health education, and communicable disease control.

The objective of this project is to increase the number of nurse-midwives so that there will provide enough of them for all service centers in the country at the rate of one nurse-midwife for each unit.

⁴⁶ Department of Health, *Annual Report . . . , op. cit.*, p. 171.

By means of affording training to candidates with grants, many nurse-midwifery schools, either run by the Government or privately, have cooperated toward accomplishing the goal of the project. Some of these schools are at Chulalongkorn Hospital, Vajira Hospital, and at MacCormick Hospital in Chiengmai. In 1963 there were 326 graduates from these sources.⁴⁷

Table 33 shows figures on all nurse-midwifery and midwifery schools.

TABLE 33. NURSING SCHOOLS AND THEIR GRADUATES IN 1963.

Types of Schools	Number of Schools	Number of Graduates per year
Basic school of nursing, midwifery, and health (4-year course)	10	500
College of Nursing (4-year course, B.S.N. offered)	1	20
Post-graduate School of Nursing (1-year course)	1	50
Post-graduate School of Public Health Nursing (1-year course)	1	20
Midwifery School (18-month course)	3	230
School of practical nursing (1-year course)	4	150
Total	20	970

Source: Ministry of Public Health, *Public Health in Thailand, B.E. 2506*, p. 51.

Table 33 shows that there exist many types of nursing schools at different levels, and that approximately 970 graduates are produced each year,

5.3. Inservice Training.

In order to give graduates an opportunity to benefit themselves by more extensive and current knowledge in order to be in tempo with the progressive developments in their fields, various public health institutions have, from time to time, organized special inservice training. Below are mentioned such training courses which have been sponsored by the Ministry of Public Health.

5.3.1 Courses for Physicians and Nurses.

A brief inservice course is conducted yearly for doctors in rural areas, lasting four to six weeks each time and enlisting 15 to 20 candidates. It aims at presenting

⁴⁷ *Ibid.*, pp. 210-211.

an opportunity to these doctors to improve their knowledge by reacquaintance with six subjects; namely, medicine, surgery, obstetrics, pediatrics, radiology, and anesthesia.

There are also refresher courses for other branches of the medical arts. Each is independently organized, requiring about 3 months to a year. Courses cover, for example, training in child diseases, mental diseases, dentistry and dental health, pharmacy, and nursing.

5.3.2 Courses for Indigenous Midwives.

Another important refresher course involves the training of indigenous midwives who still work in most parts of the country—especially in remote rural districts. The Department of Health realizes the importance of raising the standards of practice of these old-fashioned midwives by introducing them to the field of modern maternal and child health, in order to assure greater safety to both mothers and babies. This project came into reality in 1957 with the aid of UNICEF. It is a 10-year project which plans to train 1,000 candidates each year. Each course lasts two weeks. From the start of the project to 1962 there have been 11,012 indigenous midwives trained under this project.⁴⁸ Thus it can be seen that the number of trained midwives has exceeded expectations. Plans call for the training of 22,000 indigenous midwives throughout the country within 10 years time, so that each village may have at least one midwife.

With respect to the objective of improving the quality and increasing the quantity of medical and other health personnel, it may be concluded that Thailand has taken significant strides in this direction. The extent to which this achievement has been less than desired is in large part a reflection of the handicaps which exist, particularly the economic status of the nation.

⁴⁸ *Ibid.* pp. 212-213.

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3. STUDY ON NUTRITION

INTRODUCTION

The purpose of this project is to study the nutritional needs of Thai children to form a basis for planning for them, as well as suggesting further research in the field.

In order to understand the nutritional needs of the Thai children, published and unpublished research concerning nutrition in Thailand were reviewed and studied under the following headings:

1. Food consumption, dietary patterns and their implications
2. Nutritional status during the prenatal period
3. Nutritional status during the postnatal and weaning period
4. Nutritional status of the preschool-age children
5. Nutritional status of the school-age children
6. Provisions for improvement of the nutritional status through education, public health services and other means.

Nutritional studies in Thailand are limited both in number and scope. They are usually case studies dealing with specific groups or specific localities; and, naturally, one village is not the same as the others, though they are similar. The results of one study may not be totally applicable to the whole country. The only study ever carried out extensively in Thailand is the one by the Inter-departmental Committee on Nutrition for National Defense (18). The ICNND-study covers every region of Thailand, but deals mostly with the overall nutritional status of adults, both civilians and service men. The nutritional status of specific age groups is deduced from case studies by various groups of researchers.

Thailand is a rice growing and exporting country. Over a million tons of rice surplus are exported every year. The nutritional problem of the Thai people is not deficiency in general, but rather deficiency of specific nutrients. The Thai pattern of diet consists primarily of rice and "with-rice". The "with-rice" refers to other foods, excluding fruits and sweets. Rice is such a staple item in the life of the Thai people that when a Thai thinks of a meal, he thinks of rice and he means rice. He may eat three platefuls of rice and a few spoonfuls of "with-rice", just to make the rice more tasty.

Fish and seafoods, poultry, hogs and cattle yield about one-third of the total protein in the diets of the Thai people. Many varieties of vegetables, including the leaves and fruits of some trees, are part of the Thai diet.

The calorie intake of Thai families is about adequate—1770 calories per person per day, about 100 calories less than the average requirement estimated by the ICNND (18). The consumption of fat is too low to insure good absorption of fat-soluble vitamins, especially of vitamin A. Protein intake is also low—only 47

grams per person per day, about 80 per cent of the recommended allowance—and animal protein is especially limited.

Deficiencies in calcium, vitamin A, thiamine, and riboflavin exist in various degrees in every part of the country. The average intake of calcium is only 266 milligrams per persons per day (one-third of the recommended allowance); vitamin A intake is less than 3000 International Units per person per day (three-fifths of the recommended allowance); the average intakes of thiamine and riboflavin are 0.42 and 0.50 millgrams per person per day, respectively (also about one-third of the recommended allowance).

Iodine deficiency and bladder stones are confined to the northern and north-eastern regions. A great majority of the Thai people are infested by parasites and enteric pathogens. Cases of liver flukes and tapeworms are not uncommon in the northeastern region. Many people are infested with more than one parasite. Less than one per cent of the subjects investigated were completely free of parasites and enteric pathogens.

Children and young adults of Thailand have better dental health than young Americans. Among Thai children, those in the rural areas have better teeth than those in Bangkok. A low percentage of decayed, missing, and filled teeth has been observed until after 40 years of age, when there is a sharp increase in the loss of teeth caused by periodontal disease.

Pregnant women as well as lactating women eat the same kind of food as is consumed by the other members of the family. Thus it is apparent that these persons, who need proteins, vitamins and minerals in a much greater quantity than do ordinary members of the family, receive an inadequate supply of these nutrients. Beriberi and a history of beriberi have been reported among these two groups.

The infant death rate is high, especially for those younger than four months of age. The death rate during the first year of life is higher than in any other year—amounting to 19.7 per cent of the total deaths in 1962; and more than one-half of the infant deaths are under three months of age (1962 data).

Infants are usually breast fed, and sometimes breast feeding is carried on into the second year of life. It has been reported that Thai infants' growth becomes retarded after six months of age. The weaning infants generally do not receive a milk supplement, although some may have bananas as a supplement to soupy mashed rice. Very few have vegetables and fish before they join adults in family meals. Infantile beriberi has been reported in the general population as well as in hospital wards.

Preschool-age children receive less attention from organizations outside the family than any other age group. They eat the same food as adults, without milk supplement. They do not see doctors if they are not sick. Cases of

kwashiorkor among this group have been reported by hospitals. Rickets can also be found among this age group.

School-age children eat their lunches away from home. Lunch is provided for them by several means, but an organized cafeteria system is rare. School authorities are attempting to provide better lunches, promoting well-balanced meals which may serve an educational purpose as well as affording adequate nourishment to the youngsters.

The Government of Thailand with the cooperation of FAO, WHO, and UNICEF has launched a Pilot Project in expanded Nutrition at Ubon, and the establishment of a second project is under consideration. Iodized salt has been distributed to goiter areas free of charge through the Ministry of Health. Increases in the production of iodized salt and fish-liver oil are planned. Programs of nutrition education with demonstrations by means of mass communication have been initiated by the Department of Health.

Nutrition education needs to be provided in school by a more effective means. Though the Government has seen the importance of such education and time is allotted for it in secondary schools, the quality of instruction has not been satisfactory. Better methods of teaching need to be introduced along with a curriculum which provides for both knowledge and practice in food selection and meal preparation—which is the applied aspect of nutrition education. Information about the nutrition needs of all ages should be included in the curriculum.

Unfortunately, most children leave school after finishing grade four. Nutrition education, especially about food selection, should be provided for these children who might never have more schooling. Knowledge of nutrition should be offered somehow, at least through being incorporated into reading books for grade four children.

The curriculum of adult education should include information about nutrition, at least in reading exercises. Community development programs can include a great deal of information on nutrition in the demonstration projects which reach housewives directly.

Preparation of manpower to work in the home economics field is essential both for the training of qualified teachers to improve the quality of instruction of homemaking education—especially in the rural areas—and for the training of qualified home economists to work in rural development programs.

Recommendations:

1. The Nutrition Project should be extended to other provinces. It is the responsibility of the Ministry of Education and institutions of higher learning to produce qualified personnel for this type of work:

2. Scholarships should be offered to students for studying nutrition in Thailand and abroad.
3. The research work of the Division of Nutrition should be expanded, and the results of the research should be published and disseminated to educational institutions and through mass media.
4. The sanitation standard for food distribution and food serving establishments should be clarified, publicized, and enforced.
5. Due to lack of qualified workers in sanitation control, and in nutrition, the Ministry of Public Health should train persons initially to carry out the work.
6. The community development project should be expanded and the project should include teaching and demonstrations about food and nutrition to rural housewives.
7. Community leaders should receive special training so that they can understand the value of thoughtful selection and preparation of foods and so they can provide advice and be a good example to others in their communities.
8. Scholarships should be offered for studying community development with emphasis on nutrition on the condition that the recipients will work in their communities upon completion of studies.
9. Improvement of the quality of instruction in secondary schools is needed. More efficient and effective methods of teaching must be introduced. Information and practice in the selection and preparation of foods should be provided. Furthermore, the curriculum should include instruction about the differing food needs at various age levels.
10. Since most children, unfortunately, leave school at grade 4, some knowledge about nutrition (especially food selection) should be provided for them. Such information could be incorporated into the reading materials for grade 4.
11. Information about nutrition should be included in the curriculum for adult education, at least in reading exercises, so that these adults could make use of it in their households.
12. Advanced training in nutrition should be provided to a greater number of students in order to assure a supply of teachers and specialists for work in the field. Furthermore, in-service training is needed for those (whose educational preparation is limited) already serving in the field. This training will be costly and may require support from abroad. Probably a bachelor's degree should be held by those doing teaching and field work in this specialty.
13. The institutions of higher learning should take initiative in educating personnel in nutrition by establishing a degree-level home economics curriculum in universities or colleges.
14. Research on foods and nutrition should be initiated, and the results published and communicated to the public.

FOOD CONSUMPTION, DIETARY PATTERNS AND THEIR IMPLICATIONS

Most of the nutritional surveys made in Thailand by various groups (2, 3, 5, 14, 17, 18 and 20)* were conducted in the rural areas of the country, and, of course, the subjects were mostly farmers. Two meals per day is usual among adult farmers; a third meal may be eaten during the transplanting and harvesting seasons when working days are longer and harder (3:8 and 18:248)†.

Rice is the chief element of rural diets. Glutinous rice is the staple food for the Northern and the Northeastern people (2:99 and 18:230), while the rest of the country consumes regular rice. Since the recent introduction of small rice mills into the villages, home-pounded rice, which is richer in thiamine, is not as frequently used as before (18:247).

Fish—both from the sea and fresh water—in various forms and vegetables are the staple foods next in importance to rice (3:10 and 18:26). Fish, as well as other seafoods, if available, are highly desired for food by all Thai families, both urban and rural. Fish comes to market in various forms—fresh, iced, dried, salted, smoked and dried, fermented, and ground. A fish meal factory has been opened in Thailand but this product is not included in the human diet yet; its use is still confined to animal feeding.

Pork is another source of proteins for the general population, especially in the Chinese community, but it is a prohibited food among the Muslims, who eat beef instead. Poultry and eggs are consumed by all. These three sources of animal proteins (pork, beef and poultry) are expensive and many families can not afford them.

Insects, including silkworms, are eaten by rural folk and especially by the inhabitants of the Northeast.

Vegetables, cooked and raw, are eaten almost every day with a dip dish called "namprik", which is a thick sauce made of fermented plankton crustacea or small fish, chilies and lemon. Vegetables consumed by the Thai people include the young fruit of certain species of trees, roots, and a great variety of leaves.

Fruits are consumed in small quantity, according to reports (3:10 and 18:248), in spite of an abundant supply and a great variety. This may be because the surveys were not made in fruit season nor in fruit growing areas; and fruit is sometimes eaten between meals and, thus, may not be included in the reports.

Other food commonly used in the Thai diet, but in small quantity, are dried chilies, onions, garlics, limes, coconuts, palm sugar, herbs, and spices.

* Figures in the parentheses indicate numbered bibliography; those after the colon indicate page number.

Average nutrient intakes.

The dietary survey carried out by the ICNND (18) included civilians as well as servicemen. It is the only study ever carried out in Thailand rather thoroughly and on a large scale. It included samples of the population which represented every part of the country. From the report of the ICNND study one can appreciate the general nutritional status of the Thai people, the difference between institutional feeding and family feeding, and the comparison of diets between Thailand and other countries. Table 1 shows the average nutrient intakes of various groups in Thailand.

TABLE 1. AVERAGE NUTRIENT INTAKES PER PERSON PER DAY OF THAI SERVICEMEN AND CIVILIANS AS STUDIED BY THE ICNND IN 1960, BY FOOD COMPOSITE ANALYSES.

Individual nutrients	Army	Air Force	Navy	Civilians
Number of men studied	3249	838	361	513
Total calories	2998	2977	2608	1770
Protein (gm)	90.4	67.9	64.6	47.2
Fat (gm)	38.2	24.9	27.7	17.3
Calcium (mg)	765	455	351	266
Iron (mg)	64.3	48.1	70.2	18.5
Vitamin A and carotene (I.U.)	<1802	<2005	<1540	<2963
Thiamine (mg)	1.78	2.38	1.18	0.42
Riboflavin (mg)	0.94	1.04	0.48	0.50
Niacin (mg)	32.6	49.8	22.9	9.80
Vitamin C (mg)	32	29	18	26

Source: ICNND's Report.

The diet of the servicemen in general was shown to be better than that of civilians. From Table 1 it is obvious that the only things that civilians receive in greater amounts than servicemen do are vitamin A and carotene, which are probably eaten in the form of leafy vegetables.

The comparison of the diets of the Thai servicemen and the servicemen of other nations is made by ICNND as shown in Table 2.

The Thai servicemen receive a lower amount of proteins, calcium, and vitamin C than the Korean, Vietnamese, and Philippine military men, and a lower intake of vitamin A than all of them except the Koreans. The ICNND's scales of adequacy of nutrient intakes are quoted in Table 3.

TABLE 2. MEAN INDIVIDUAL INTAKE OF NUTRIENTS PER DAY—COMPARISON OF THE THAI MILITARY WITH RESULTS OF ICNND STUDIES IN MILITARY GROUPS OF OTHER FAR EASTERN COUNTRIES.*

Individual nutrients	Republic of China 1960	Republic of Korea 1957	Republic of Vietnam 1959	Republic of Philippines 1958	Kingdom of Thailand 1960
Total calories	2857	3814	3123	2638	2947
Protein (gm)	93	127	100	105	84
Fats (gm)	38	43	45	30	35
Calcium (mg)	957	780	850	1054	675
Iron (mg)	50.6	34.0	32.0	26.0	63.0
Iodine (mg)	—	—	1.25	—	0.11
Vitamin A (I.U.)	2835	1218	3101	2496	1795
Thiamine (mg)	1.07	2.09	0.75	1.01	1.78
Riboflavin (mg)	1.89	0.99	1.13	0.75	0.90
Niacin (mg)	25.5	21.1	17.8	19.0	33.5
Vitamin C (mg)	17	55	47	43	30

*As determined by chemical analyses of food composites.

Source ICNND's Report.

TABLE 3. SUGGESTED GUIDE TO INTERPRETATION OF NUTRIENT INTAKE DATA (BASED PRIMARILY ON THE YOUNG ADULT MALE).

Nutrients	Deficient	Low	Acceptable	High
Protein (gm/person/kg.)	0.50	0.50–0.99	1.00–1.49	1.50 +
Calcium (mg/person/day)	300	300–399	400–799	800 +
Iron (mg/person/day)	60	6.0–8.9	9.0–11.9	12.0 +
Vitamin A (I.U./person/day)	2000	2000–3499	3500–4999	5000 +
Vitamin C (mg/person/day)	1000	10.0–29.9	30.0–49.9	50.0 +
Thiamine (mg/1000 calories)	0.20	0.20–0.29	0.30–0.49	0.50 +
Riboflavin (mg/person/day)	0.70	0.70–1.19	1.20–1.59	1.60 +
Niacin (mg/person/day)	5.00	5.0–9.9	10.0–14.9	15.0 +

Source: ICNND's Report.

From Tables 2 and 3 it seems that the diet of the servicemen is acceptable except for the amounts of vitamin A, vitamin C, and riboflavin, all of which fall in the low range of the scale.

The civilian diet seems to be in the low range for almost every nutrient. The calorie intake is 100 less than the requirement estimated by the ICNND—1871 per person per day. Total protein intake of servicemen seems to be acceptable according to the ICNND estimation, but only thirty-one per cent of the protein comes from animal products.

The average intake of calcium, 266 mg. per person per day, should alarm any nutritionist. The average intake of iron, 18.5 mg. per day, is the only one that is satisfactory. The average intakes of vitamin A, vitamin C, and niacin are low, and the average intake of riboflavin is strikingly low. The ICNND study found that the average intake of thiamine was 0.42 mg. per person per day, and since variation in thiamine intake among villages was small, it indicates a relatively consistent picture of low thiamine intake.

This information can be summarized by stating that the average intake of calories by the civilian population is slightly low, while the average intakes of calcium, thiamine, riboflavin, and vitamin A appear too low for optimal nutritional status. According to Hawek's study (14), it is partly the poverty in certain sectors of the population and partly ignorance that cause malnutrition in this nation of abundant rice production.

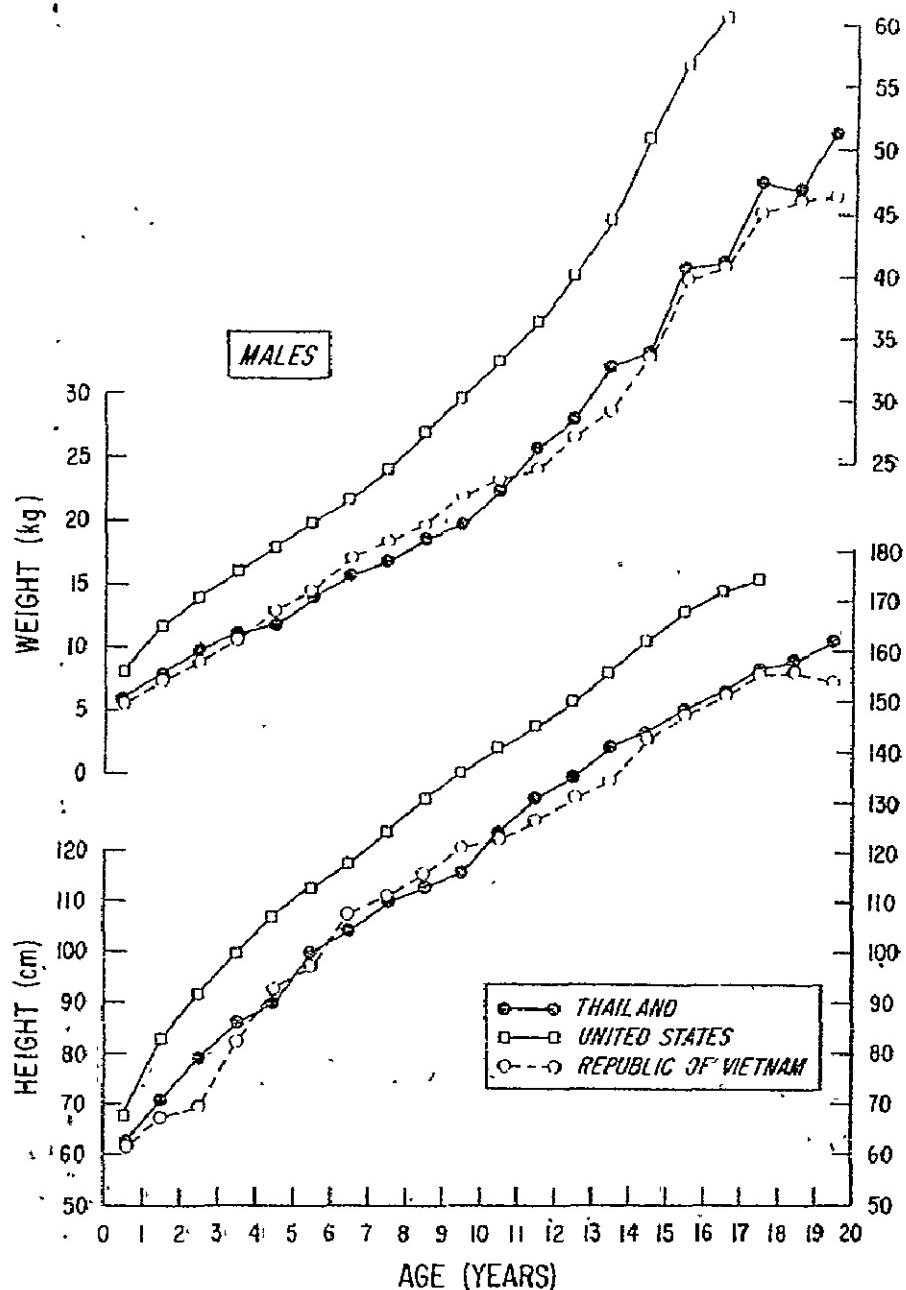
Weight and height.

Changes in weight may reflect nutritional status. From the ICNND's study (18:16-17), Figures 1 and 2, which compare the growth of Thai children up to 19 years of age in weight and height to that of American and Vietnamese children, show that Thai children are slightly heavier and taller than Vietnamese children when they are preschool age and secondary-school age, but slightly lighter and shorter during elementary-school age. Thai children are much lighter and shorter than American children at all ages, and the differences become greater as they grow older.

Figures 1 and 2 compare the average height and weight of Thai children to those of other nations. Figure 3 compares height and weight of Thai adults to those of other nations.

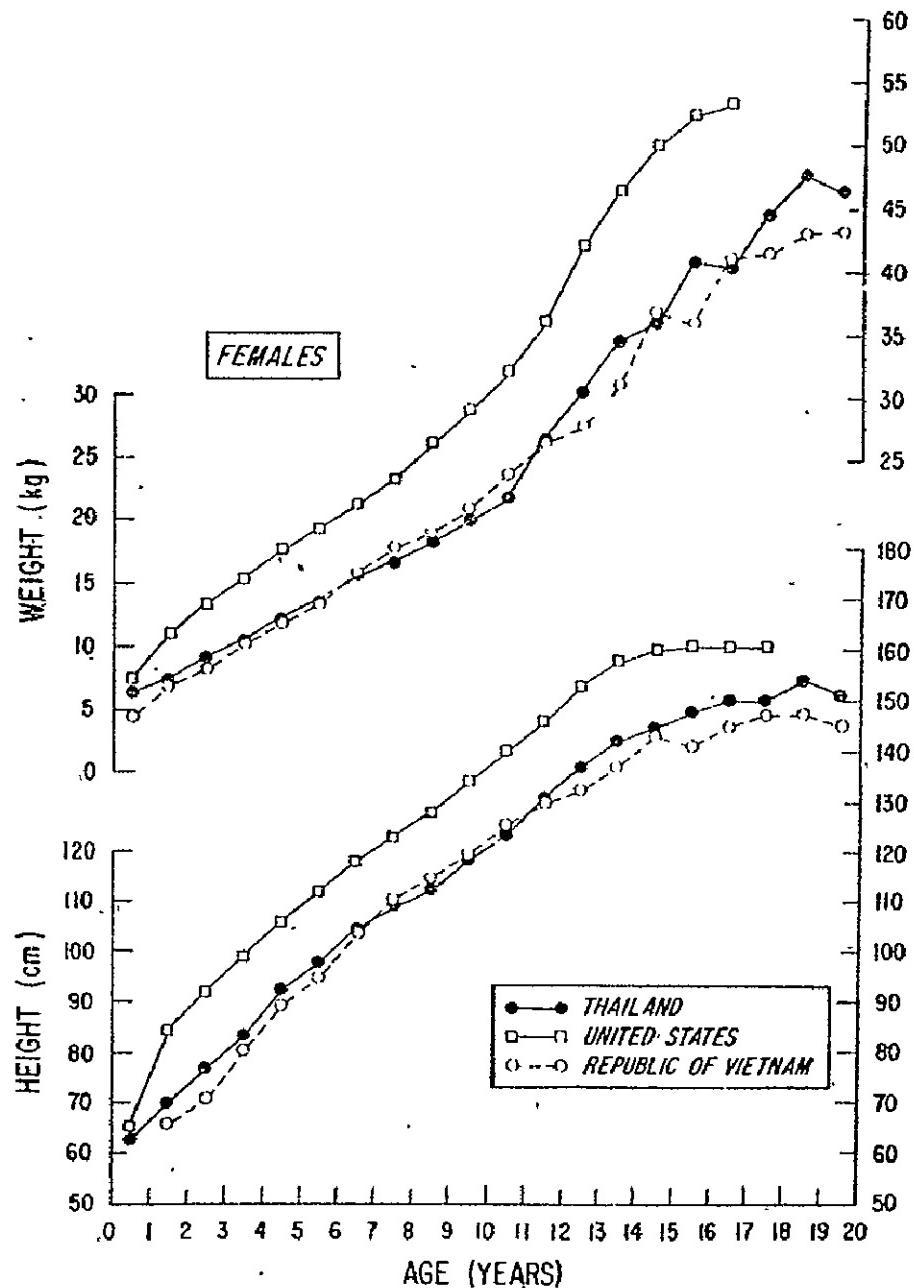
Figure 3 shows that Thai civilian men are shorter and lighter than Thai servicemen, but that American male civilians are heavier and taller than American military men. Among the Oriental military men surveyed by the ICNND (18:110), South Koreans and the people of Taiwan are the tallest; the Vietnamese, the shortest and lightest. The Thais and the Filipinos are about the same in height and weight.

Female Thai adults are slightly taller and heavier than the Vietnamese are, but much shorter and lighter than women in the United States.



*U.S. data from State University of Iowa Child Welfare Research Station, Vietnam data from ICNND Survey, 1959

Figure 11. Average Height And Weight of male Thai children And Young Adults Compared With U.S. And Vietnamese Averages.



*U.S. data from State University of Iowa Child Welfare Research Station; Vietnam data from ICNND Survey, 1959

Figure 2. Average Height And Weight of Famale Thai Children And Young Adults Compared With U.S. And Vietnamese Averages.

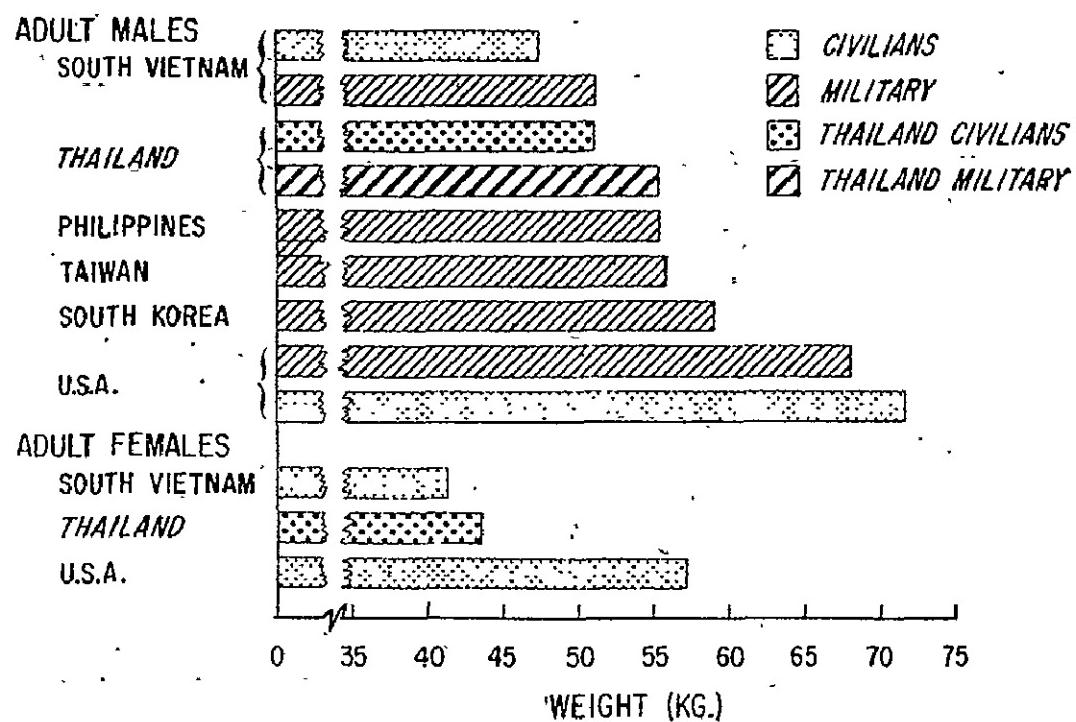
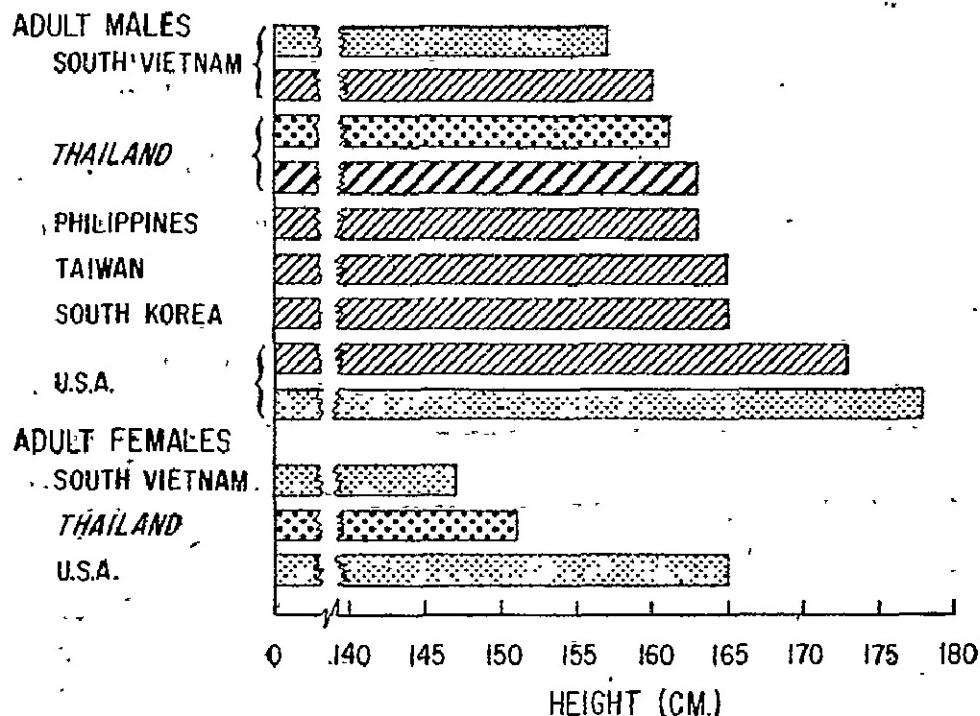


Figure 3. Comparison of Average Heights and Weights of Thai Adults with Averages from Other Countries.

Dental Health.

The ICNND study (18:81) reveals that the dental status of Thai children is better than that of the American children. Table 4 compares dental health of the Thai people to that of some inhabitants of the state of Maryland.

TABLE 4. MEAN NUMBER OF DECAYED, MISSING AND FILLED TEETH PER PERSON BY AGE, MALES AND FEMALES COMBINED, THAILAND AND BALTIMORE, MARYLAND, U.S.A.

Age group	Thailand	Baltimore, Md.
0-4	.00	—
5-9	.16	—
10-14	.58	—
15-19	.96	11.92
20-29	.84	14.01
30-39	.95	15.94
40-49	2.89	18.26
<u>50</u>	<u>10.57</u>	<u>22.34</u>
Average > 15	1.95	18.06

Source: ICNND's Report.

The average number of decayed, missing and filled permanent teeth for individuals 15 years of age and older examined in Thailand was 1.6 teeth per person. The quasi-random sample of the same ages examined in Baltimore, Maryland, gave an average of 18.1 decayed, missing and filled teeth per person. Figure 4 illustrates a low DMF* level for Thai children and young adults as compared to that for Americans of the same ages. Figure 4 illustrates the rise of periodontal disease among Thai people after the age of 40.

An average of less than one decayed, missing and filled tooth per person was recorded for those examined in Thailand through the age of 39 (18:79). Low DMF levels were evidenced until after 40 years of age, when there was a sharp rise due to the loss of teeth caused by periodontal disease.

*DMF Decayed, missing and filled teeth.

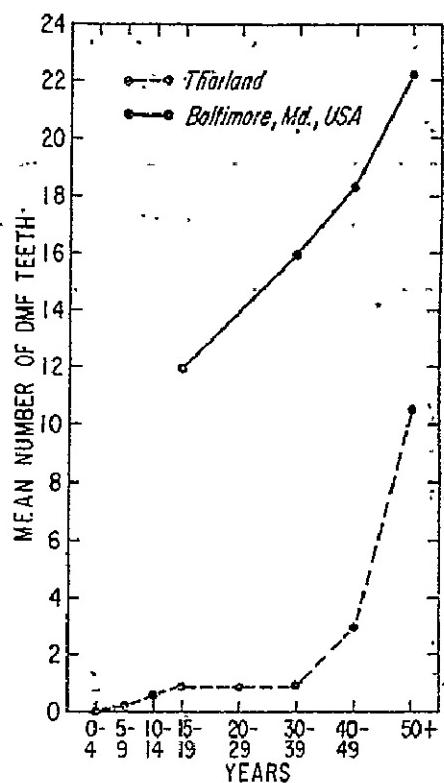


Figure 4. Mean number of decayed, missing, and filled teeth per person by age—males and females combined.

Thailand and Baltimore, Maryland, USA.

Source: ICNND's Report.

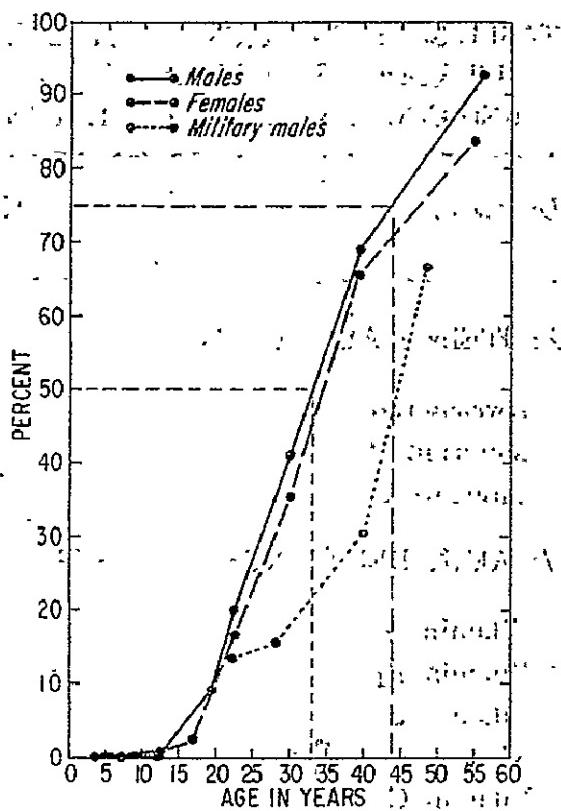


Figure 5. Percentage of persons with destructive periodontal disease by age and sex—military and civilian—Thailand, 1960.

Common nutritional problems.

Many of the diseases most commonly known in Thailand often are related to diet. Beriberi, anemia, goiter, angular lesions, vesical calculi (bladder stones), and parasites are some of the diseases and symptoms of diseases that are the results of poor diet. Research has been conducted concerning these diseases. The hospitals' diagnoses of malnutritional disorders in 1962 for the Kingdom of Thailand are listed in Table 5.

Suwannus's 1962 research (37) as shown in Table 5 confirmed previous research which showed that beriberi, anemia, goiter, vitamin A deficiency, and vesical calculi disturbance still exist in Thailand and, more importantly, contributed knowledge about the incidence of particular disorders as determined by hospital records. These individual disorders will be discussed according to the results of research available on them.

TABLE 5. STATISTICS OF MALNUTRITIONAL DISEASES AND RELATED DISEASES, REPORTED BY HOSPITALS IN THE DEPARTMENT OF MEDICINE FROM ALL OVER THE COUNTRY, 1962.

Diseases	Number admitted to the hospitals*	Number of deaths
PROTEIN MALNUTRITION		
Kwashiorkor	437	9
Marasmus	206	8
Unidentified	1,205	37
VITAMIN DEFICIENCY DISEASES		
Vitamin A	745	—
Vitamin B ₁	6,580	17
Vitamin B ₂	1,394	—
Niacin	73	—
Vitamin C	1,900	—
Vitamin D	67	—
Vitamin K	161	3
Unidentified	430	—
DENTAL DISEASES: Caries		
	55,763	—
Diabetes Mellitus	1,365	9
Endemic Goiter	901	1
Anemia	5,268	28
Urinary Calculi	6,277	33
Obesity	70	—
Sprue	71	—

* Total number of out-patients and patients admitted into all hospitals are 2,234,189.

Source : Suwannuss's Report (37)

Beriberi. Very few clinical cases of beriberi were observed; the prevalence of bilateral loss of ankle jerks did not attain a five per cent level in any area surveyed by ICNND (18:33). But the reports of the Department of Health (27 and 28) on the morbidity and mortality rates of beriberi indicate that beriberi is one of

the nutritional problems of Thailand. Table 6 presents the number of cases of beriberi treated in hospitals and first class health centers in Thailand.

TABLE 6. NUMBER OF CASES OF BERIBERI TREATED IN HOSPITALS AND FIRST CLASS HEALTH CENTERS IN THAILAND DURING 1956.

Classification of hospitals	Number of hospitals	Number of beriberi patients			
		Male	Female	Sex unknown	Total
Government Hospitals	88	5189	3832	190	9211
Municipal Hospitals	42	1026	1221	—	2247
Private Hospitals	16	369	380	—	749
Health Centers	50	941	985	—	1926
Total	196	7525	6418	190	14133

Source : Bisolyaputra's Report.

Table 6 shows that in 1956 there were 9,211 cases of beriberi treated in Government hospitals, but Suwannus (37) reported only 6,580 cases of beriberi treated in Government hospitals in 1962. Thus there has been an apparent decrease in the incidence of severe cases, at least with respect to those requiring hospitalization.

The mortality rate from beriberi in Thailand as recorded by the Vital Statistics Division of the Department of Health is shown in Table 7.

TABLE 7. NUMBER AND RATE OF DEATHS CAUSED BY BERIBERI FROM 1950 TO 1962.

Year	Number of deaths	Rate per 100,000 population
1950	1659	9.0
1951	1920	10.3
1952	2031	10.7
1953	1478	7.7
1954	1523	7.7
1955	1248	4.9
1956	2020	8.5
1957	1770	7.3
1958	1680	6.7
1959	1223	4.8
1960	1172	4.4
1961	896	3.3
1962	921	3.3

The incidence of deaths due to beriberi among various age groups based upon the statistical records in 1962 is shown in Table 8.

TABLE 8. INCIDENCE OF DEATHS DUE TO BERIBERI ACCORDING TO AGE IN THE YEAR 1962.

Age group	Number of deaths	Percentage of total
Less than 1 year	10	1.09
1- 4 years	36	3.91
5-14 years	35	3.80
15-24 years	67	7.28
25-44 years	241	26.17
45-59 years	260	28.23
60 years and over	272	29.52
All ages	921	100.00

Source : Vital Statistics Division, Department of Health.

The figures in Table 8 show that in 1962 more than half of the total number of deaths from beriberi (57.75 %) were among the eldest groups, while the rate for the infant group was negligible. But infantile beriberi, as reported in the Nutritional Survey of the ICNND, is not infrequent in wards of hospitals (18:33). During the last few decades, reports the same source, beriberi has become more a disease of children and pregnant women, and less one of adults in general. Most authorities agree that the peak incidence of infantile beriberi occurs between the second and fourth months of life. The peak of infant mortality in Thailand in 1957 occurred in the second month of life (18:33).

Anemia. Anemia is prevalent in Thailand (18:42). An appreciable portion (12 per cent) of the total group studied by ICNND had a hemoglobin level below 10 gms/100 ml. Among the civilians, hemoglobin determination revealed an appreciable degree of anemia in every surveyed location, with a mean value for the entire group of 11.6 gms/100 ml. Twenty-two per cent of the civilians had a hemoglobin level below 10 gms/100 ml. It was also found by the ICNND study that the lowest mean hemoglobin level was evidenced by the group of women 45 or more years of age (9.8 gms, compared with 11.4 gms. for the non-pregnant, non-lactating women 15-44 years of age), the same group with highest incidence of filiform papillary atrophy. Lactating women and pregnant women both tended to have a hemoglobin level only slightly lower than that of the non-pregnant, non-lactating women (10.4, 10.2 and 10.8 gms/100 ml., respectively). Table 9 shows the incidence of filiform papillary atrophy, the mean hemoglobin levels, and the percentage of cases with deficient and low hemoglobin.

TABLE 9. CLINICAL FINDINGS AMONG CIVILIANS ON FILIFORM PAPILLARY ATROPHY AND HEMOGLOBIN LEVEL, BY AGE AND SEX, 1960.

Examination Findings	0-4 yrs.	5-9 yrs.	10-14 yrs.	15-44 yrs.	45+ yrs.	Pregnant	Lactating
Percentage Prevalence							
Male							
FPA -slight	—	3.2	0.5	1.7	2.3		
FPA -medium and severe	0.5	1.0	1.0	0.3	0.6		
Female							
FPA -slight	1.5	1.1	—	3.1	9.0	10.0	7.2
FPA -medium and severe	—	0.5	—	2.4	7.5	2.0	3.0
Hemoglobin Level							
No. of male subjects	—	11	16	52	18		
Mean (gms/ml)	—	10.7	11.6	13.7	12.4		
% "deficient"	—	54.5	50.0	13.5	38.9		
% "low"	—	45.4	43.8	42.3	33.3		
No. of female subjects	3	16	19	31	19	9	28
Mean (gms/ml)	12.9	10.8	11.4	11.4	9.8	10.4	10.2
% "deficient"	—	81.2	63.2	54.8	94.7	100.0	67.9
% "low"	100.0	12.5	31.6	45.2	5.3	—	21.4

FPA . Filiform Papillary Atrophy

Source : ICNND's Report

Goiter. Prevalence of goiter in the North and Northeast of Thailand has been long known, and several surveys have been made especially in the northern provinces. The recent extensive study by the ICNND confirmed that iodine insufficiency is a serious nutritional problem in Thailand. Table 10 shows the number of cases of goiter in various areas of the country.

It is apparent from Table 10 that iodine deficiency is most prevalent in the northeastern regions of Thailand. Natural sources of iodine in those regions—plants and animals, salt and water—are inadequate to supply a sufficient amount of this element in the diet. The Department of Public Health is aware of this deficiency and with the cooperation of UNICEF, FAO and WHO has carried out the iodization program of salt in the goiter areas since 1961 (28:75). A more detailed study

TABLE 10. PREVALENCE OF GOITER AMONG CIVILIANS - ABBREVIATED EXAMINATIONS, 1962

Location	Age 0 - 14 years				Age 15 + years			
	Male	Female	Male	Female	Male	Female	Male	Female
	Number examined	% incidence in sample	Number examined	% incidence in sample	Number examined	% incidence in sample	Number examined	% incidence in sample
Songkhla	81	0	90	0	94	0	116	2
Chiengmai	114	28	111	33	136	21	163	58
Lopburi	41	2	33	6	34	12	58	43
Udorn	215	4	231	11	129	10	158	30
Ubol	136	40	147	75	127	48	145	72

Source : ICNND's Report

of the prevalence of goiter in Thai school children in the section of this report concerning school children.

Angular lesions and Bitot's spots. Riboflavin deficiency may result in the development of angular lesions, and vitamin A deficiency causes Bitot's spots to appear. Though the report of the ICNND (78) does not reveal many cases among Thai civilians, it can be said that some kind of action should be taken, probably through education, to help this nation rid itself of these health impairments that need not occur. Table 5 (page 102) gives figures on the incidence of riboflavin and vitamin A deficiencies.

Vesical Calculi. Information available about the incidence of vesical calculi, or bladder stones, indicates that the disease is especially prevalent in Northern and Northeastern hospitals. The etiology of this disease is still not clear. Vitamin A deficiency is believed to be, and is generally mentioned as, a cause in almost every instance (3:41). Chutikorn of the Ubon Rajathani Hospital reported that operations for kidney stones were daily routine occurrences (3:41). Stones of the bladder occurred most frequently and there were a few cases of stones of the urinary tract which always required an emergency operation. The incidence by age groups of the 1250 operation among the 1970 cases who came to Ubon Hospital for treatment during the five and a half years from 1937-1942 are tabulated in Table 11.

TABLE 11. NUMBER OF CASES OF BLADDER STONE OPERATIONS, BY AGE AND SEX.

Age	Male	Female	Total
Under 10 years	738	124	862
11-20 yrs	195	29	217
21-30 yrs	75	1	76
31-40 yrs	48	5	53
41-50 yrs	22	4	26
51-60 yrs	9	-	9
61-70 yrs	7	-	7
Total	1094	156	1250

Source: Bisolyaputra's Report.

Among the vesical calculi cases, the age of three months was the youngest and 70 the oldest. About 61 per cent of the cases were children under 10 years. There were more cases operated on among males than among females.

Singkalyanij of the Roi-et Hospital (3:41) reported 1300 cases of calculi among the 27,270 out-patients examined during the period from 1941-1949. Out of these, 896 cases required operation.

During the two and a half years from 1952-1954, 597 cases of calculi received treatment from Konkhaen Hospital, which is in the same area (Northeast) as Ubon and Roi-et.

There were very few cases reported in the northern, central and southern regions of the country.

The Medical Symposium in 1954 sponsored by Ministry of Public Health (3:42) suggested several etiological factors in vesical calculi formation. Some of these are vitamin A deficiency, drinking water containing a high amount of soluble lime, crystalloid and colloid imbalance in the urinary system due to improper food, and metabolic disorders.

Passmore (3:43) concluded from his observations that the cause of bladder stones in the Northeast of Thailand probably is the existence of harmful ingredients in the diets of that region. Toxic factors in food may cause the imbalance of urinary colloid, and some changes may be involved in the surface tension of the bladder, and this in turn results in stone formation. Bisolyaputra has agreed with Passmore's view (established as a result of a dietary survey) that unusual kinds of vegetables, mostly in the form of tree leaves of peculiar types, are commonly consumed in the Northeast. Some of them are coarse leaves of large size, which appeared likely to contain a high amount of oxalic acid.

Education which focuses on selection of food materials should be one effective way of reducing this health hazard for the people of northeastern Thailand.

Parasites. Infestation by liver flukes is one of the reasons generally cited for the physical inactivity of the residents of northeastern Thailand. The ICNND's study (18:288) compares the previous findings on parasites with their findings in 1960, as shown in Table 12.

TABLE 12. PARASITOLOGICAL FINDINGS AMONG THE THAI MILITARY AND CIVILIAN—COMPARISON WITH THE 1951-1955 SURVEY OF THE THAI DIVISION OF COMMUNICABLE DISEASE CONTROL.

Regions	Number examined	Round	Hook-	Whip	Strongy-	Tape-	Liver	Intestinal
		worms	worm	worm	loides	worm	flukes	flukes
Percentage infested								
Central Region								
1951-55 survey	21478	26.4	11.2	3.3	—	0.2	0.3	1.3
ICNND (Bangkok, Lopburi, Sattaa- heep)	108	25.0	13.9	—	0.9	—	0.9	0.9
Northern region								
1951-55 survey	8389	26.4	18.1	5.2	0.9	1.2	10.3	0.1
ICNND (Chiengmai)	43	39.5	14.0	—	—	—	—	—
Southern region								
1951-55 survey	41337	70.5	34.4	48.3	—	—	—	—
ICNND (Songkhla)	48	25.0	37.5	—	—	—	—	—
Northeastern region								
1951-55 survey	192499	7.5	19.5	2.4	1.2	3.4	29.8	—
ICNND (Udorn, Ubol)	119	32.8	18.5	2.5	0.8	1.7	10.1	—
Totals								
1951-55 survey	263703	19.6	21.1	9.7	0.9	2.5	22.1	0.1
ICNND Military groups	202	29.2	17.3	0.5	0.5	0.5	2.5	0.5
ICNND Civilian groups	116	31.0	22.4	1.7	0.9	0.9	6.9	—
ICNND Combined groups	318	29.9	19.2	0.9	0.6	0.6	4.1	0.3

Source; ICNND's Study.

THESE ARE TO THAILAND	Death Rates/100,000		WHAT THESE ARE TO U.S.A.
	Thailand 1962	U.S.A. 1962	
Certain Diseases of Early Infancy	52.7	105.8	Vascular Lesions Affecting the Central Nervous System
Diarrhea and Enteritis	34.0	33.3	Hypertensive heart disease
Tuberculosis of the Respiratory System	31.6	32.1	Pneumonia and Influenza
Pneumonia	28.9	30.2	Accidents other than motor Vehicles
Malaria	24.3	21.9	Motor Vehicle Accidents
Diseases of the Heart	20.1	16.9	Other diseases peculiar to Early Infancy
Accidents	19.1	16.7	Diabetes Mellitus
Diseases of Pregnancy Child-birth and Puerperium	16.1	13.9	Other Heart Diseases
Dysentery, All Forms	5.3		
Typhoid and Paratyphoid	4.9	4.7	Tuberculosis
Diseases of the Stomach and duodenum	3.8	4.4	Gastritis duodenitis, enteritis and colitis, except diarrhea of the newborn
Beriberi	3.3	3.1	Infective and Parasitis

Note: All classifications based on the Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death (7th Revision, 1953)

THESE ARE TO THAILAND TODAY	Thailand 1962	U.S.A.	WHAT THEY WERE TO THE U.S.A. IN
Gastroenteritis	41.1	38.9	1922
Tuberculosis, All Forms	31.9	30.0	1948
Pneumonia and Influenza	28.9	28.2	1956
Typhoid and Paratyphoid Fever	4.9	4.9	1928

Sources: Thailand: Division of Vital Statistics, Ministry of Public Health.

U.S.A. 1916-1942: Historical Statistics of the United States—Colonial times to 1957.

U.S.A. 1962: Vital Statistics of the United States, 1962.

Figure 6. Comparative Mortality Rates for Specific Disease Entities in Thailand and the U.S.A.

The data in Table 12 indicate that infestation by liver flukes and tapeworms is more prevalent in the northeastern region while hookworms are more prevalent in the South. It has been suggested that the infestation of flukes in the Northeast is the result of eating raw fish. Poor sanitation probably is the other definite cause of the parasites. More round worms, but less liver flukes were found in ICNND survey than in the 1951-55 survey.

Many subjects were infested with more than one type of parasite. Less than one per cent of both military and civilian groups were completely free of parasites or enteric pathogens (18:42).

Figure 6 shows the major causes of death in Thailand and in the United States. It also compares some of the causes of death in Thailand in 1962 as to when they were a major cause of death in United States.

NUTRITIONAL STATUS DURING THE PRENATAL PERIOD

It has long been recognized among the educated group of Thai people that adequate maternity and child care is essential to provide the basis for optimum development of manpower resources as well as for promoting the fullest opportunity for healthy individual growth. When Siriraj Hospital (the first in Thailand) was opened, in order to encourage the use of the hospital service for mothers and children Queen Sawapa—who always used the obstetric service for delivery of her royal children—offered money to women who sought service from the hospital. Seventy years have passed since that time, but a large percentage of the pregnant women in Thailand still do not receive proper medical attention and service. Only 20 percent of all expectant mothers in Thailand were reported by Sicault (34:29) to have received medical care before delivery. This is due partly to the limited number of doctors and qualified nurses, and partly to ignorance and superstition on the part of the families and the women themselves. There have been many projects that have dealt directly with mother and child care. In Chiengmai there has been a project (18:21) since 1952 concerned with maternal and child health. This project was put into operation by the Thai Government (under the guidance of WHO during the first four years) and serves a population of about 180,000 persons (1/4 of Chiengmai Province), including the City of Chiengmai. The staff of the project consists of 6 medical officers, 13 nurses, 41 midwives, 2 clerks, 1 pharmacist, 1 sanitary inspector, and 42 other employees. The staff of the project has gathered data concerning the approximate causes of infant (less than one year old) mortality, as well as of maternal and child mortality.

Two studies carried out in Thailand that have contributed important information about the nutritional status of expectant mothers are Cornell's (13) and TUFEC's (2). The findings of both studies are in agreement that pregnant women eat the same foods as consumed by other family members. TUFEC reported that pregnant women eat a larger quantity of glutinous rice (2:79), and seem to have a strong preference for sour foodstuffs. Both studies reported that during a period of between a week to fifteen days both before and after delivery, most women are restricted to a diet consisting only of rice and salt or salted fish. As has been noted in the section dealing with specific nutritional disorders, a number of pregnant women are afflicted with beriberi.

The reports of both studies imply that malnutrition is prevalent among expectant mothers. In the previous section mention was made of the fact that the diets of Thai families are inadequate, especially in proteins, calcium, vitamin A and thiamine. All of these nutrients are needed in an even greater quantity by pregnant women.

The ICNND's survey disclosed important information concerning the health status of pregnant and lactating women which is related to dietary conditions. Table 13 provides some findings of the survey.

TABLE 13. SOME CLINICAL FINDINGS OF PREGNANT AND LACTATING WOMEN.

Abbreviated examinations	Pregnant	Lactating
Number examined	50	167
	Percentage of Incidence	
Nasolabial seborrhea	2.0	2.4
Angular lesions	6.0	4.2
Angular scars	—	0.6
S.R.P. - localized	14.0	12.0
FPA - slight	10.0	7.2
FPA - Medium and severe	2.0	3.0
Goiter, grade I	18.0	30.5
Goiter, grade II+	34.0	24.6
Bilateral AJ loss	2.0	3.0

Source: ICNND's Study.

The findings in Table 13 suggest deficiencies of vitamin A, vitamin B complex, and iodine among pregnant women and lactating women.

It seems advisable that education about nutritional needs of pregnant and lactating women—as well as of infants and children—be provided to school children and adults in rural areas. During the last year that most children attend school (grade 4) they should receive this useful information which may not be available to them at all if not extended during their formal schooling.

Organizations working for community development should provide information to adults on food and care for mother and child. Adult education, if available, should also include nutrition and mother and child care in the curriculum, at least in reading exercises.

NUTRITIONAL STATUS DURING THE POSTNATAL AND WEANING PERIOD

Though it is reported by Jellife (16:42) that infant nutrition in Thailand appears to be conspicuously better than in most tropical countries, the death rate of infants due to malnutrition is still high. (At least this is true if one notes that there are many cases of infant deaths which are not clearly defined, and some of them probably involve nutritional deficiency.) Table 14 gives figures on causes of deaths among infants.

TABLE 14. INFANT (LESS THAN ONE YEAR OLD) MORTALITY DUE TO CERTAIN CAUSES, AND RATE OF DEATH PER 1000 LIVE BIRTHS.

Cause of Death	Total		Malnutrition		Infant diseases not clearly defined		Stomach trouble	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Year								
1957	47,962	61.7	8,087	10.4	9,316	12.0	4,219	5.5
1958	42,779	54.1	3,674	4.6	10,732	13.6	3,642	4.1
1959	40,583	47.1	3,451	4.0	9,549	11.1	2,922	3.4
1960	44,793	49.0	2,392	2.6	11,541	12.6	3,595	4.0
1961	46,571	50.8	1,994	2.2	11,438	12.5	3,037	3.3
1962	43,489	44.7	1,824	1.9	10,507	10.8	3,180	3.3

Source: Health Department's Annual Report, 1963

The rate of death due to malnutrition is decreasing, as can be seen in Table 14. Breast feeding is a common practice in Thailand (18:212, 13:1 and 25, and 2:24 and 127). In rural areas, breast feeding is continued into the second year of life or until the next pregnancy (13:16, 2:125). Hawck's findings on the weaning age are shown in Table 15.

From Table 15 it seems that most mothers wean their children between the ages of 12 - 22 months; but one mother in this study continued breast feeding until the child was three years old.

Rural lactating mothers, usually have a restricted diet for two weeks after delivery consisting of rice and salt or salted fish; after that they resume ordinary family diets (13:1 and 2:127).

It is obvious that the diets of most lactating mothers are not adequate, since the average family's pattern of eating is not adequate, as previously discussed. Consequently, the food that the infants receive from breast feeding is not adequate.

TABLE 15. AGE AT WEANING FOR 37 BABIES AT BANGCHAN VILLAGE,
1952-54.

Approximate age at weaning (months)	Numbers of babies
5	1
9	1
11	1
12	8
13 - 14	5
16 - 17	2
18 - 19	8
20 - 22	7
25	2
28	1
36	1

Source: Hawck's Study.

The need to improve diets in Thailand, especially in the Northeast, is evidenced by the occasional occurrence of beriberi or history of beriberi among mothers. Medical surveys and family dietary studies have shown its presence (13:1).

According to Hawck (13:16), by three months of age about half of the infants in her study were being given bananas as a supplementary food. In most instances these infants up to six months of age received additionally only mashed soupy rice. A few were fed protein-rich food in addition to rice between the sixth and ninth months. Increasing use of protein-rich foods, primarily fish and eggs, was noted for infants from nine to eleven and a half months of age. Fruits other than bananas and "kha-nom" (sweet desserts) were also given to older infants. A few were given vegetables before one year of age, but none had this daily.

Hawck (13:2 and 42) reported in her conclusion that many of the young children in her study failed to gain; or even lost, weight in the intervals between observations. Almost all infants appeared to gain steadily up to six months of age, but stationary weight or weight loss for periods of from 1 to 7 months was observed in most children at some time. These periods were noted more frequently among children from 2 to 3 years of age than among younger ones.

Jelliffe's study in 1955 and Falkner's study in 1958 indicate that the weight gain during the first six months of life of the infants in the tropics is comparable to that of infants in Europe and America. After six months the weight curves of infants in this region become flattened. Monkolsmai (3:41) compared the weight of Thai children with that of Japanese children. He found that during the first

six months of life Thai infants weighed as much as Japanese infants but after this age they weighed less. Chandrapanond (3:41) in 1957 compared the weight of the Thai infants she observed with that of American babies and found that after 4 months of age the Thai infants gained weight more slowly. Both Monkolsamai and Chandrapanond expressed the opinion that Thai babies gained weight more slowly as they grew older because of the inadequacy of their diets.

Evidence of protein malnutrition has not been commonly recognized in rice eating areas, reported Hawck (13:46) who further stated that one must consider the possibility that these children may be in a state analogous to pre-kwashiorkor. Fifty-four children with kwashiorkor were observed by Netrasiri and Netrasiri (23). Most of them were still being breast fed when the disease was diagnosed. This is another evidence of the inadequacy of the diets of the lactating mothers.

An extract of the Semi-annual Report, January 1 - June 30, 1960 of the Children's Hospital, Bangkok, is shown in Table 16.

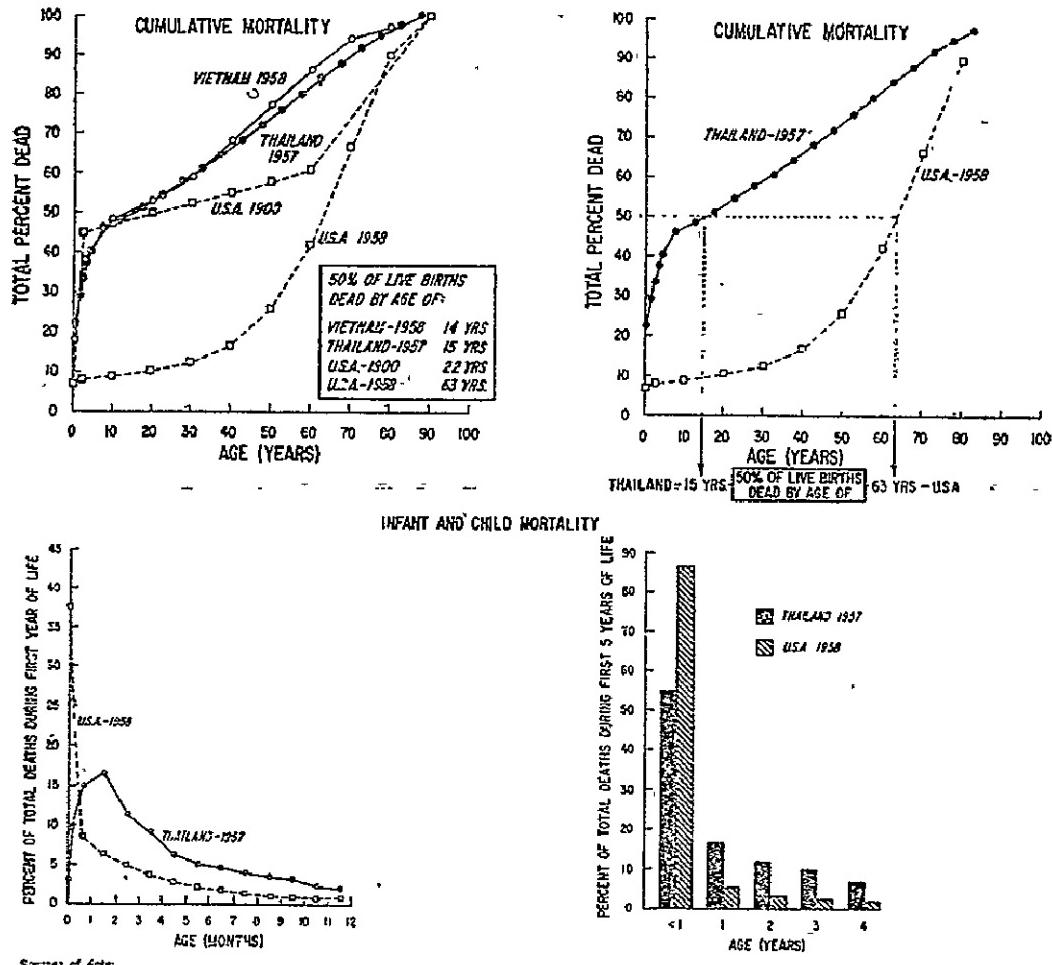
TABLE 16. NUTRITIONAL AND RELATED DISEASES ENCOUNTERED IN THE CHILDREN'S HOSPITAL, BANGKOK, FROM JANUARY THROUGH JUNE, 1960.

ICD*	Disease	Deaths	Totals
046	Amoebiasis	3	7
280	Beriberi	1	22
286.1	Vitamin A deficiency	-	2
286.2	Vitamin B deficiency except beriberi and pellagra	-	1
286.5	Malnutrition, unqualified	9	32
286.6	Kwashiorkor	-	1
286.7	Other multiple deficiency states	-	-
434.1	Congestive heart failure (non-rheumatic)	7	8
602	Calculi of kidney and ureter	-	2
604	Calculi of other parts of urinary system	-	5
772.0	Nutritional maladjustment, without mention of 'immaturity'	2	10
772.5	Nutritional maladjustment with immaturity	-	1

* International Classification of Diseases, (ICD), 1955 edition.

Source: Semi-annual Report, Jan. 1 - June 30, 1960, Children's Hospital, Bangkok.

Though the total number of nutritional and related diseases reported by the hospital, 91, is low compared to the total number of patients admitted into the hospital—2821—it indicates that malnutrition occurs in Bangkok.



Sources of data:

Thailand: Division of Vital Statistics, Ministry of Public Health, Bangkok
 Vietnam: National Institute of Statistics, Saigon
 USA 1900: Historical Statistics of the United States, Colonial Times to 1957, p 10-29
 USA 1959: Vital Statistics of the United States, 1959, vol 2, p 132-133,
 vol 1, p 560-561

Figure 7. Comparison of Mortality Rates in Thailand to Vietnam and/or the United States.

The death rates for various age groups of Thai children as reported by ICNND (18:21) is shown in Figure 7 and Table 17.

TABLE 17. INFANT AND CHILD MORTALITY BY AGE GROUPS.

	Percentage of total deaths during first year		Percentage of total deaths during first five years		
Age groups Thailand 1962	U.S.A. 1958	Age groups Thailand 1962	U.S.A. 1962		
< 1 days	2.4	37.7	< 1 year	57.4	85.9
1 - 6 days	8.9	25.6	1 "	16.0	5.7
7 - 27 days	15.0	8.6	2 yrs.	11.4	3.4
28 - 59 "	16.5	6.5	3 "	8.8	2.7
2 months	11.7	5.1	4 "	6.4	2.2
3 "	9.5	3.9			
4 "	6.7	2.9			
5 "	5.8	2.3			
6 "	5.2	1.9			
7 "	4.3	1.4			
8 "	3.7	1.2			
9 "	3.2	1.1			
10 "	2.6	0.9			
11 "	2.0	0.9			
Not stated	2.5	-			
Total %	100.0	100.0		100.0	100.0

Source: *Annual Report, 1963*, Department of health Demographic Yearbook, 1963, U.N.

Table 17 and Figure 7 show that the death rate of Thai infants is relatively high from the seventh day of life to 2 months of age, while that of the infants in the United States is relatively high during the first six days of life, and especially during the first day. It is apparent that of the total number of deaths occurring during the first five years of life, a larger percentage of those in the U.S. occur during the first year than is the case in Thailand. This indicates that problems of malnutrition and of disease account for a substantial portion of deaths occurring between one and five years of age in Thailand, whereas these factors are not so significant in the United States.

The principal causes of infant mortality are listed in Table 18.

TABLE 18. THE PRINCIPAL CAUSES OF INFANT (LESS THAN ONE YEAR) MORTALITY IN THAILAND COMPARED WITH THEIR INCIDENCE IN THE U.S.A.

Principal causes of deaths	Death rate per 1000 live births	
	Thailand—1962	U.S.A.—1958
Nutritional maladjustment and ill-defined diseases peculiar to early infancy	12.7	1.6
Pneumonia	3.2	2.3
Diarrhea of the newborn	3.1	0.1
Acute upper respiratory infection	0.6	0.1
Influenza	0.2	0.1
Malaria	0.8	—
Dysentery	0.2	—
Measles	0.1	—
Others	21.7	22.9
Total (all causes)	42.6	27.1

Source: ICNND's Report, and Vital Statistics Division, Ministry of Health.

Among the principal causes of infant mortality in Thailand, as shown in Table 18, the rate of death due to nutritional maladjustment and ill-defined diseases peculiar to early infancy is the highest. But nutritional maladjustment is almost negligible in the United States.

One approach used by the Government to improve the nutritional situation that seems to have been somewhat successful is the Chiengmai Maternal and Child Health Project (18:113). Since the beginning of this project in 1952, the infant and maternal mortality rates in the project area have been decreasing. Table 19 shows the maternal and child mortality rates of all of Chiengmai Province and those of the Chiengmai Maternal and Child Health Project area.

The death rates of mothers and infants in the Maternity and Child Health Project area show a better picture than those for the entire Chiengmai Province. The death rates of both categories, in any case, have been decreasing since the beginning of the project.

This kind of approach should be expanded throughout the country. Education about nutrition and home-making can be given in elementary schools and in adult education in rural areas, in order to decrease infant mortality and to promote practices and conditions favoring healthy development of children.

TABLE 19. INFANT AND MATERNAL MORTALITY IN CHIENGMAI PROVINCE
AND IN CHIENGMAI MATERNAL AND CHILD HEALTH PROJECT BY
YEARS

Year	Infant mortality per 1000 live births		Maternal mortality per 1000 live births	
	Chiengmai Province	MCH Project	Chiengmai Province	MCH Project
1952	132.0	117.0	—	—
1953	131.0	91.0	—	—
1954	117.0	82.9	—	—
1955	110.0	71.3	—	—
1956	95.7	75.5	4.3	2.3
1957 *	97.3	81.9	3.4	3.4
1958	83.0	69.0	3.3	2.0
1959	72.2	61.7	2.7	1.8

* influenza epidemic

Source: ICNND's Report.

NUTRITIONAL STATUS OF PRESCHOOL-AGE CHILDREN

The preschool age group, from one to five years of age, is the group about which this writer has had the most difficulty in finding research. There seems to be a lack of information existing about the nutritional needs and associated health condition of preschool age children.

The study of the ICNND compares the average weights and heights of Thai children to those of the United States and Vietnam, as seen in Table 20.

TABLE 20. AVERAGE HEIGHTS AND WEIGHTS OF THAI CHILDREN COMPARED WITH U.S. AND VIETNAMESE AVERAGES.

Sex	Age (yrs.)	Average height (cm)			Average weight (kg)		
		Thailand	Vietnam	U.S.A.	Thailand	Vietnam	U.S.A.
Male	< 1	62	62	68	6.2	6.0	8.2
	1	71	67	83	8.0	7.7	11.8
	2	79	69	92	9.8	8.8	14.0
	3	86	82	100	11.2	10.9	16.1
	4	90	93	107	12.4	13.0	18.1
	5	100	97	113	14.2	14.5	20.0
Female	< 1	63	—	66	6.4	4.5	7.6
	1	70	66	84	7.5	6.9	11.0
	2	77	71	92	9.2	8.3	13.5
	3	84	81	99	10.6	10.4	15.5
	4	92	89	106	12.5	12.1	17.7
	5	98	95	112	13.8	13.7	19.5

Source: ICNND's Report.

Table 20 shows that the Thai children are slightly taller and heavier than Vietnamese children but shorter and lighter than American children.

As was shown earlier in Table 17, of the total number of children who die between birth and age 5, a larger proportion of these die between ages one and five in Thailand than is the case in the U.S.

There are no statistics available on morbidity of this age group, but there were cases of beriberi reported at the children's ward of the Siriraj Hospital (23), and cases of nutritional and related diseases reported at the Children's Hospital, Bangkok (18:117).

A dietary survey for this particular group is not available, but since after weaning the Thai children eat the same food as consumed by other members of the family (16:18), it may be concluded that:

1. The Thai children of preschool age are undernourished due to a high starch diet, and thus they lose their appetite (16:18).

2. Protein malnutrition is possible due to the insufficient amounts of protein foods that are consumed at this age. Thai children are not frequently given milk or other substitutes. Some ignorant mothers still believe that big belly disease, which is symptomatic of kwashiorkor, is the result of eating too much fish or meat, and thus fish and meat are not given to children. On the contrary, meat, fish, eggs, milk and legumes yield good quality proteins which are, according to research, the only cure for kwashiorkor (16 and 34).

3. Mineral and vitamin deficiencies, principally of vitamin A, thiamine, riboflavin, calcium and iodine (in certain areas), are evidenced from the clinical findings and dietary surveys carried out in Thailand (3, 6, 13, 18 and 23).

The health of this age group is very important to the further development of the nation's human resources. If the children are healthy, physically and mentally, they can become valuable assets of the nation. Otherwise, they will become liabilities. More research needs to be done in regard to this age group.

NUTRITIONAL STATUS OF THE SCHOOL-AGE CHILDREN

Case studies of food consumption and diets among the elementary school children have been carried out in various places in Thailand, especially in the rural areas (3:28). Through the studies by these researchers, the existence of food deficiencies in some parts of the country has been revealed. Attention has been given to some specific nutritional diseases endemic to certain areas such as goiter, beriberi and also vesical calculi.

Height and weight are two of the indicators of children's health. There have been studies on height and weight of elementary school children in rural areas, and in Bangkok. Table 21 contains data from research by Bisolyaputra (3), Vachanond (39), and Klerks (20).

TABLE 21. AVERAGE HEIGHT AND WEIGHT OF THAI CHILDREN IN RURAL AREAS AND IN BANGKOK.

Sex	Age (Yrs.)	Height			Weight		
		Northern Thailand ¹	Bangkok ²	Bangkok ³	Northern Thailand ¹	Bangkok ²	Bangkok ³
Males	7	110.25	113.31	118.20	18.70	18.60	20.25
	8	114.00	116.26	122.37	20.05	19.57	22.09
	9	117.69	122.11	127.18	21.45	21.52	23.85
	10	120.93	125.11	131.65	22.71	22.74	26.27
	11	124.93	129.69	136.62	24.31	25.20	28.98
	12	126.79	132.26	136.62	25.52	26.51	30.20
Females	7	109.40	112.87		18.16	18.19	
	8	113.25	115.79		19.68	18.97	
	9	117.53	121.88		21.45	21.39	
	10	120.57	126.93		22.50	23.86	
	11	124.32	131.56		23.98	26.11	
	12	125.92	138.16		25.13	30.92	

¹ The data for this column were collected by Bisolyaputra in Chiengmai in 1949.

² The data for this column were collected by Vachanond in 1957 in urban areas of Bangkok.

³ The data for this column were collected by Klerks in the well-to-do class of Bangkok in 1958.

The data in Table 21 show that the rural children are shorter and lighter than the urban children; and that the Bangkok boys of higher socio-economic class are generally taller and heavier than average Bangkok boys. This seems to indicate that the physical growth of the children from well-to-do families in urban Bangkok is greater than that of average Bangkok children, and that average Bangkok children grow to greater size than rural children. It may be concluded that the difference which exists among children from different parts of the country in regard to growth

is at least in part a result of the differences in their nutritional status, and that probably is a reflection of their varying environmental circumstances—particularly with respect to family economic and educational status.

Suggestive signs of deficiencies.

In a 1949 study, Patanapakdi reported that occurrence of minor dietary deficiencies with their characteristic symptoms usually can be observed among the people of rural areas, especially of the younger ages. Table 22 presents data collected in this study from 95 boys and 103 girls, whose average age was ten years, average height 125.3 centimeters, and average weight 25.3 kilograms.

TABLE 22. OCCURENCE OF SIGNS OF MALNUTRITION AMONG SCHOOL CHILDREN IN MINBURI, BANGKOK, 1949.

Examination findings		Number of cases
Eyes	Normal	159
	Trachoma	26
	Pale	12
	Bitot's sport	1
Mouth and Teeth	Good	146
	Caries	41
	Scurvy	1
	Spongy gum	1
	Dirty gum	2
	Angular stomatitis	7
Knee and Leg	Normal	143
	Bowed leg—mild	51
	Bowed leg—extreme	4
Skin	Normal	163
	Scabies	13
	Eczema	3
	Ringworm	3
	Dermatitis	1
	Depigmentation	1
	Wounded	6
	Pellagra	3
General Health	Fair	192
	Defective	6

Data from Table 22 give a rough idea of the probable deficiencies among elementary school children. Calcium, vitamin A, and vitamin B are among these deficiencies.

The more informative study carried out by Hawck and Anusith at the same village from 1952-1954 included the adolescent and adult population in addition to the elementary school children. The results are shown in Table 23.

TABLE 23. SUMMARY OF THE OCCURRENCE OF CLINICAL SIGNS POSSIBLY RELATED TO NUTRITIONAL DEFICIENCY, BANGCHAN, 1952-1954.

Examination	Random Sample of Families								School Children	
	Adults		Children							
	Male	Female	15-19		7-14		Under 6		Boys	Girls
	M	F	M	F	M	F	M	F		
Total number examined	37	45	9	8	16	18	33		119	114
<i>Clinical signs</i>										
Hb. 11.5 g. or less / 100 ml.	2	14	—	—	1	3	—		10	11
<i>Hair:</i> Dirty and staring	—	—	—	—	1	2	—		9	9
Diminution, loss of pigment	—	—	—	—	—	—	—		—	1
<i>Eyes:</i> Excess conjunctival tissue	3	6	—	—	—	—	—		—	—
<i>Lips:</i> Cheilosis	—	—	—	—	—	—	—		1	1
Angular stomatitis	1	2	—	—	—	—	—		1	2
<i>Tongue:</i>										
Papillae atrophied	—	1	—	—	1	—	—		1	1
Papillae hypertrophied	2	1	—	—	—	—	—		2	3
Appearance fissured	1	1	—	—	1	—	—		2	—
Appearance geographical	—	1	—	—	1	—	—		3	—
<i>Gums:</i> Swelling	—	—	—	—	—	1	—		2	2
Redness	—	1	—	—	1	1	—		2	3
Recession	—	—	—	—	—	—	—		—	1
<i>Thyroid:</i> Enlarged	—	—	—	—	—	—	—		1	—
<i>Skin:</i> Symmetrical dermatitis	—	—	—	—	1	—	—		1	1
Phrynodermia	—	—	1	—	—	—	—		5	6
Xerosis	—	2	—	—	—	2	—		24	12
Loss of elasticity	—	7	—	—	—	1	—		3	—
Atrophic	—	6	—	—	—	—	—		—	—
Ulcers	—	—	—	—	1	1	—		8	6
Knee jerk absent	11	2	1	—	2	2	5		—	3
Ankle jerk absent	9	9	1	—	—	1	6		—	2
Liver enlarged	1	2	—	1	1	2	1		14	7
Spleen enlarged	—	2	—	1	—	2	—		—	1
<i>Skeleton:</i> Bowed legs	13	13	1	—	2	—	2		8	2
Knock knees	—	1	—	—	1	—	—		10	6

Hawck pointed that almost half of the group examined; 46 per cent of the school children and 47 per cent of the family sample, were free of signs of nutritional deficiency. The distribution of specific signs was present in more cases among adults than among children and adolescents. Among children, a larger proportion of elementary school children than of preschool children or adolescents had possible signs of deficiencies.

The incidence of riboflavin deficiency was reported by Ramalingswami (25) in 1955. The number of cases of angular stomatitis found among subjects under 20 years of age in four different provinces of the country are shown in Table 24.

TABLE 24. INCIDENCE OF RIBOFLAVIN DEFICIENCY AMONG SUBJECTS UNDER TWENTY YEARS OF AGE IN FOUR DIFFERENT PROVINCES OF THAILAND

Province	Number surveyed	Percentage of incidence
Chiengmai (in the North)	252	6.3
Chiengrai (in the North)	67	16.4
Ubol Rajathani (Northeast)	71	21.1
Udonthani (Northeast)	55	21.8

Source: ICNND's Report.

In 1956-1958 Klerks (20) made a study on the nutritional status of the school children in the northern and central parts of the country. Some results are shown in Table 25.

TABLE 25. CLINICAL IMPRESSION OF CALORIC STATUS OF CHILDREN IN THE NORTH AND AROUND AND IN BANGKOK.

Caloric status	Chiengmai (North)		Lampang (North)		Uttaradit (North)		Phrae (North)		Bangkok (Minburi)		Bangkok Children of higher class	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Percentage												
Excellent	6.7	8.4	13.1	13.4	0	7.1	5.7	5.4	10.6	—	35.3	—
Good	35.0	44.1	42.4	47.7	42.2	40.5	38.1	44.8	33.8	—	35.0	—
Fair	49.3	41.0	36.9	34.7	42.2	47.6	47.6	44.1	23.2	—	19.7	—
Bad	9.0	6.5	7.6	4.2	15.6	4.8	8.6	5.7	32.4	—	4.5	—

Clinical impressions of caloric status provided by Klerks as shown in Table 25 indicated that the percentage of school children with bad caloric status is higher in Minburi, a rural area of Bangkok, than in other provinces studied.

Klerks's study (20) shows that deficiency-suggesting symptoms were very rare or absent in both groups of the boys investigated in the Bangkok area. Only a few cases of angular lesion as well as of cheilosis and one case (from each group) of Bitot's spot were found. The condition of teeth of the economically poor was better than that of the well-to-do group. Table 26 compares the dental condition of the two groups.

TABLE 26. PERCENTAGE OF CARIOUS STATE OF TEETH OF MINBURI BOYS AND BANGKOK BOYS.

State of teeth	Minburi boys		Bangkok boys	
	Number	Percentage	Number	Percentage
No caries	79	52.3	163	25.7
1-2 carious teeth	49	32.4	204	32.1
More than two carious teeth	23	15.3	268	42.2

Source: Bisolyaputra's Report.

From the results of various studies reported here it can be concluded that deficiency-suggesting symptoms occur generally among children although the frequency is not great, and the conditions are rather mild.

Beriberi, though not frequently found in surveys, still exists among children and is reported by hospitals. Goiter is prevalent to a striking degree among school children in the North and Northeast, but is almost nonexistent in the central and southern regions.

Signs of kwashiorkor or severe protein malnutrition were found infrequently in these studies in spite of the low animal protein intake which was reported in every study. It was believed by some of the researchers (3:34) that the high biological value of protein in glutinous rice commonly available in the diets of infants and young children in the North and the Northeast was responsible for this matter. Kwashiorkor, although it is rare in the rural areas of the country, still can be seen in Bangkok. Netrasiri and Netrasiri (23) reported 54 cases of kwashiorkor admitted in the pediatric wards of Siriraj Hospital from 1952-1955.

Signs of riboflavin deficiency among children are common, due to lack of meats, beans, and milk in the diets. Symptoms of vitamin A deficiency were not marked, but were evident. Most of the cases found, other than those involving riboflavin deficiency, were multiple deficiencies of the vitamin B complex due to high consumption of polished rice and also to lack of meats, beans, fruits, etc.

PROVISIONS FOR THE IMPROVEMENT OF NUTRITIONAL STATUS

The Thai Government has realized the importance of the quality of food to the health of the people, as can be seen from the "Control of the Quality of Food" Act which was passed and reviewed several times (Government Gazette 1941, 1959, and 1964). The latest act, which was passed on February 13, 1964, emphasized the purity and the wholesomeness of preserved food—both imported and manufactured domestically.

The Thai Government also realizes that the improvement of people's nutritional status must be done through several channels: through education, community improvement, economic improvement, agricultural improvement, and also public health services.

Through education.

Education in nutrition and homemaking has been provided in the curriculum since the beginning of public schools in Thailand (22: 188). At present, provision for nutritional and homemaking education is required by the government for girls' schools at various levels, especially in elementary and secondary schools. Table 27 contains data on percentage of time allotted for nutritional education, homemaking education and home economics, calculated from the curricula at various levels.

Table 27 shows that preparation for teachers and workers in the field of nutrition is available to a limited degree at most levels. There are also problems with the conventional method of teaching that confront the growth and effectiveness of homemaking education (22: 188), especially at the secondary level.

Through Public Health Services.

The Nutrition Division of the Ministry of Public Health (27) has contributed in these ways to the betterment of nutrition standards and practices in the Kingdom:

1. Training of community development workers, nurses, and teachers; lectures to villages, students, and student-teachers; and distribution of written materials about foods and nutrition.
2. Promotion of health by direct distribution of fish-liver oil, preparation and distribution of recipes of inexpensive dishes with high food values, and experimentation with lunch programs and three-meal feeding.
3. Research on proteins, fats, and vitamins.

TABLE 27. NUTRITIONAL EDUCATION AND HOMEMAKING EDUCATION IN THAI INSTITUTIONS AT VARIOUS LEVELS.

Levels	Percentage of classroom time allotted for instruction	
	Nutrition	Homemaking or Home economics
Public and private schools		
Lower elementary	2.00	—
Upper elementary	2.00	6.67
Lower secondary	4.44	13.33
Upper secondary	—	—
Vocational schools		
Lower secondary	30.00	48.57
Upper secondary	6.00	60.00*
Technical Institute	24.70**	56.20**
Teacher training institutions		
Paw Kaw Saw (Teacher Certificate)	1.67	3.33
Higher Paw Kaw Saw (Higher Teacher Certificate)	4.10	21.00*
College of Education		
Second year	1.00	1.00
Faculty of Education, Chulalongkorn University	2.00	—
Kasetsart University	6.67	15.00**+electives

* If select home economics as a major.

** If select food and nutrition as a major.

4. Initiation of preventive and treatment measures for malnutrition diseases.

The Thai Government, in cooperation with the United Nations agencies—FAO, WHO AND UNICFF—established in 1961 a pilot project in expanded nutrition in the province of Ubol. The objectives of the project are:

1. To develop and strengthen a central organization capable of defining and implementing a national food and nutrition policy.
2. As a first step, and to gain experience, to establish in the province of Ubol a pilot project in expanded nutrition which will include:
 - a. The collection of basic data, e.g., on food habits, nutritional status, present and potential food production, and to form the foundation for the develop-

- ment of an experimental field service program.
- b. The training of various categories of personnel who will assist in the collection of basic data and in the conduct of the field service program.
 - c. A coordinated field service program which will operate through health services, schools, agricultural services, and the community development program.
3. The development of the Ubol project as a demonstration and training center for students in agriculture, health, home economics, social welfare, and teaching.
 4. The extension of the nutrition program to other areas of the country based on the experience gained in the Ubol project.
- This project involves four ministries—the Ministries of Public Health, Agriculture, Education, and Interior.

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4. STUDY ON FOOD AND AGRICULTURE

INTRODUCTION

Thailand's Economy is essentially agricultural. The well-being of the children of the nation, therefore, depends very much upon the agricultural production of the country. The catch and crops of the Thai people are not only for use in family meals, but also in trading for other necessities. Understanding the situation and problems of agriculture in the country would be of great help in planning to meet the needs of children in the future, both nutritionally and economically. This study is carried out with a view towards understanding the following aspects of this topic.

1. An overview of production, export and import of agricultural products.
2. Rice: its production, area of cultivation, market value and the efficiency of its production.
3. Upland crops: their production, land used for cultivation, and market value.
4. Forestry: its production and market value.
5. Livestock: its production and market value.
6. Fishing: total catch and market value.
7. Provisions for improvement.

The data in this study (unless other reference is noted) were collected from the *Agricultural Statistics of Thailand, 1962*, published by the Division of Agricultural Economics, Office of the Under-secretary of State, Ministry of Agriculture. Plans discussed in this study are taken from *The National Economic Development Plan, 1961-1966*, published by the National Economic Development Board, Office of the Prime Minister.

This study will consider only whether the production will be enough to feed the population in future and still have some surplus for export; what are the problems, and what should be done for agricultural improvement. The summary of this study is presented in the following paragraph in order to give the overview of results of the study.

Situated on the "Golden Peninsula" of Southeast Asia, Thailand has about 514,000 square kilometers of land within its boundaries, of which 2614 kilometers form the coastlines along the Gulf of Siam and the Indian Ocean. Of the total 321 million rais (514,000 sq. km.) of land, about 165 million rais (51.50 per cent) are forest and grazing land, 68 million rais are farm land and 87 million rais are swamps, lakes, and unclassified land. Of the 68 million rais of farm land, 41.5 million rais are rice paddies, while the rest are upland crop area, fruit orchards, rubber plantations and other types of farms.

About one-third of the gross national product comes from agricultural products, which are not only consumed in the country but also exported to other countries around the world. The principal agricultural products are rice, maize, rubber, mungbeans, tapioca, oil seeds, fiber crops, forestry products, and livestock and fishery products.

The agricultural production as a whole has been increasing. Since 1956 the average increase has been six per cent per year. Rice production has been increasing at the average rate of 4.7 per cent per year (Netting 8,838 million bahts in 1962), while the area planted

increased at the average rate of about two per cent per year. This indicates an increase in the efficiency of production, a fact which should be strongly emphasized. With the growth of population at the average rate of three per cent per year, it might seem that rice production would provide enough for domestic consumption and leave some surplus for export. But this cannot occur for long, at the current pace of production, since the area which can be utilized for rice farming is almost saturated. If the Government policy of reserving 50 per cent of the total land for forestry is to be maintained, only a little more land can be opened up for farming purposes. Measures must be taken to increase the production within the amount of land already cultivated.

Upland food crops have come into the picture only recently, but have come to be a very good and steady source of income. More and more land is being cultivated for this purpose. Since 1952 there has been an average annual increase of 13.31 per cent in area planted, resulting in almost an 11 per cent increase in production of upland food crops per year. The national income from this source increased at the average rate of 26 per cent per year during the seven years from 1956 to 1962. In 1962, the value to upland food crops amounted to 3.893 million bahts, about one-sixth of the total value of agricultural products. Almost one-third of all upland food crops are exported. It is likely that with the introduction of cattle farms into the country, more of the upland food crops may be used domestically.

Fiber crops is another line of agriculture which yields a good amount of income to the nation—1879 million bahts in 1961. These products have had a poor reputation recently and this was probably the cause of the drop in production in 1962. More information about methods and techniques of improving the quality of some fiber products could be included in the elementary school curriculum because manpower for this sector usually do not go beyond elementary school.

Rubber and forestry products are two other big sources of income, having contributed 1,708 and 1,200 million baht, respectively, to the national economy in 1962. Land used for rubber plantations has been increasing at the average rate of 2.48 per cent per year during the last 11 years, and the production of rubber at the average rate of seven per cent per year. This improvement in the efficiency of rubber production is rather impressive. With some rubber manufacturing industry now established in Thailand, it is hoped that this source of income will be increased. The income from forestry products has shown a declining trend.

The amount of forest area has been decreasing almost to the minimum established by the Government. In 1962, only 51.10 per cent of the total acreage of the country was forest land. The Government has been limiting the cutting of timber, especially of teak. The amount of teak produced in 1962 was a little less than half of that in 1952. The production of firewood and charcoal has been kept at a fixed rate since 1947. Bamboo and rattan are the only forestry products which have increased in production during the last ten years.

Livestock farming has never been a main occupation for the Thai people. Cattle farming is not a developing industry in Thailand; farms remain small and non-mechanized. Frequently cattle are kept for labor and later sold to cattle traders. Swine are raised on the farms as a side line rather than a main source of income.

Buffaloes are on the rice farms as a labor asset to the farmers. While some of them may be as close to the farm family as dogs are to some people, they are a kind of pet that contribute labor to the family. They are not usually killed by the owners for food, but they may be sold when the farmers have a surplus of them to the buffalo dealers, who eventually sell them to slaughter houses. When machinery comes into use, the tradition of keeping some buffaloes on the farms may fade away, and this incidental source of food may be gone one day. Some plans must be developed to cope with this foreseen problem.

The need to increase livestock production is urgent. The demand for more meat has been felt throughout the country, especially in Bangkok where the price has gone up and shortage of supply prevails. A deficiency in protein nutrient intakes has been reported in nutritional surveys by several authors. The ICNND (see Report on Nutrition) reported in 1962 that the Thai people receive only about one-third of the minimum animal protein requirement. Thailand has to import most of the milk consumed in the country — 454.2 million bahts worth of milk and milk products were imported in 1962. An increase in the number of dairy farms should be given serious consideration. Dairy farms can provide not only milk for the children of the nation, who are now deficient in animal proteins, calcium, and riboflavin, but also can offer work and income. The grazing plateau in the Northeast and the increase of upland food crops should afford more than enough food for the cattle.

The market system in Thailand does not facilitate the keeping of records of commodities sold, especially with respect to small items. Duck eggs have a central market in Bangkok, but a great number of them are traded locally and are not recorded. In 1960, about 172 million duck eggs were traded through the central market in Bangkok, and about 16,000 tons were exported through customhouses. Statistics for hen eggs are unavailable, because of the nonexistence of a central market. About 24 to 25 million chickens and seven or eight million ducks are raised on farms yearly.

Fishing has been a good source of food for Thailand and is increasing in importance. Sea foods formerly reached only people along the sea coast, but as a result of modern storage, mechanization of fishing boats, and better highways, more sea foods now can reach people in the North and Northeast. Deep sea fishing is a relatively new venture for the fishermen of Thailand, and has become an additional dependable source of food for the nation. Considering the rate of growth of the population, it is likely that fishermen may have to venture even further out in the deeper sea to secure enough food for the Thai people in the future.

The fish pond industry is another new development that is now being tried. The area containing fish ponds increased rapidly up to 10 million rais (4,769 ponds) in 1960, but the area dropped down sharply to 0.95 million rais in 1961. It came back to 2 million rais in 1962. With the opening of several recently-completed dams, it should be expected

that the landing of freshwater fish will be increased. But this cannot occur without the cooperation of the public. Education to increase the public responsibility toward conservation of the nation's property and resources should be included in the school curriculum for those who may terminate their schooling very early. Otherwise, for example, many fish will be caught before growing to profitable sizes.

Next to rice, fish comes closest to being a national food. It comes to people's minds along with rice when referring to a meal. One often says 'Kin kao kin pla,' which literally means "Eat rice; eat fish," when a person means to say, "Have a meal." This is still true today. Consumption of fishery products in the country has been increasing every year during this decade. In 1962, the fish catch was valued at 1,643 million bahts. Only 41 million bahts of fishery products were exported and 56 million bahts of these products were imported. In addition to this, the consumption of fish that does not enter into trade is estimated roughly at 20% more than the total commercial fish catch (1:84).

Provisions for the improvement of agricultural production have been made directly and indirectly by the Government through many channels. The Ministry of Agriculture gives direct help by launching many irrigation projects. Those now planned, upon completion, will cover an irrigable area of 15 million rais, hold 9,900 million cubic meters of water, and yield a power generation of 564,000 kilowatts (560,000 at Phumipol Dam and 4000 at Kang Krachan). The Ministry also sets up many agricultural experimentation centers which aim at research on farm techniques to increase farm efficiency and to reduce the cost of production in various aspects. Such matters as developing better strains, soil fertilization and conservation, mechanization, cultural practices, and utilization of soil, water and labor are given attention at these centers. These centers also serve to disseminate research findings to farmers and to provide demonstration projects on agricultural methods. Research has been carried out on rice-breeding, upland food crops, fishery experimentation, livestock and dairy farming. Campaigns and other actions for the conservation and restoration of forests also have been made by the Ministry of Agriculture.

The Ministry of Interior renders indirect help to agricultural production through its resettlement projects, community development projects, and services of border police.

The Ministry of Education has been contributing to agriculture directly and indirectly. Agricultural education has been included in the secondary school curriculum to provide direct information to children who choose agriculture as their elective. But, unfortunately, 80 per cent of the children do not attend secondary schools. Thus the curriculum of elementary school should include the teaching of agriculture, as well as other practical knowledge useful to living.

The Teacher Training Department seems to be well aware of the problem and has included agricultural knowledge in its curriculum to prepare future teachers not only for teaching their classes but also for being leaders in agricultural and community development in the communities to which they may be assigned. This project is known as the Rural Teacher Training Project, and has been in operation in Ubon since 1956, with the aid of UNESCO.

and UNICEF. It has now been expanded to other provinces in which teacher training institutions are located.

Kasetsart University has been established to offer university-level research and instruction in agriculture. It admits about 360 new students per year. Kasetsart offers a three-year "Junior degree" and four- and five- year Bachelor of Science degrees with specialization in the areas of agriculture, forestry, fisheries, veterinary science and irrigation.

Planning for the development of agriculture in Thailand by the National Economic Development Board focuses on four objectives — the development of natural resources; research and experimentation in new agricultural techniques; agricultural promotion and the diffusion of information from the results of research and experimentation; and promotion of the farmer's income and welfare through producer cooperatives and other organizations, low interest agricultural credit, and land ownership.

Recommendation

In order that the children of the nation may be fully benefited from agriculture both with respect to nutrition and to economics of the family, the following action should be taken:

1. Finding ways and means to help farmers increase the efficiency of production of crops, especially rice.
2. Some land which currently is used for rice farming, especially in the dry areas, should be converted into other types of farming which yield better income to the nation.
3. Encouragement of domestic manufacturing industries which use agricultural products, such as foods, fibers and rubber.
4. Measures should be taken immediately to halt the destruction of forests.
5. Promotion of dairy farming and of livestock and poultry farming.
6. Promotion of deep sea fishery and brackish water fishery, as well as fish farming.
7. Raising the level of education for farmers, and including agricultural knowledge in the curriculum of elementary school; improving the quality of instruction so that it is applicable to the real life situation of children; and producing agricultural teachers and leaders both in quantity and quality.

PRODUCTION, EXPORT, AND IMPORT OF AGRICULTURAL PRODUCTS.

"In water there is fish, in paddies there is rice," so said the Great King Ramakamhaeng of the Sukhothai Dynasty six hundred years ago. His words are still true today. But the people's ways of life have changed a great deal. Their needs and wants have expanded to an extent unforeseeable even to people who lived a few decades ago. Today the catch and crops are not only for the family meal but also for trading and for other needs and wants, and the trading has its horizon far out in the world. The production of agricultural products in Thailand from 1956 to 1962 is reported in table 1.

TABLE 1. ESTIMATED VALUE OF AGRICULTURAL, FORESTRY AND FISHERY PRODUCTION, 1956-1962.

Products	1956	1957	1958	1959	1960	1961	1962	Average rate of increase
								%
Rice	7129.8	5690.3	5859.4	5761.0	7144.9	8966.7	8838.3	4.87
Upland food crops	1022.9	1483.8	1673.1	2374.9	3160.9	3811.5	3893.4	25.94
Oil seeds and coconuts	1200.5	1290.5	1179.4	1333.3	1428.4	1005.2	1128.6	
Fibers	681.8	742.7	772.3	664.0	1523.6	1869.1	771.8	
Miscellaneous crops	630.2	758.0	818.7	876.5	1339.2	1355.8	1314.6	14.39
Rubber products	1521.5	1455.2	1335.7	2136.7	2203.3	1786.6	1707.8	
Forestry products	1212.8	1144.7	1102.9	1059.0	1144.4	1157.5	1201.6	
Livestock and livestock products	2102.4	2158.9	2115.0	2387.3	2581.2	2710.6	2576.8	3.62
Fishery products	1146.0	1190.0	1153.0	1233.0	1412.0	1571.0	1643.0	6.34
Total agricultural products	16647.9	15914.1	16009.5	17825.7	21937.9	24244.0	23015.9	6.01
Gross National Product	40928.9	41514.0	42210.1	46674.2	53014.6	57133.2	61441.6	

Table 1 shows that national agricultural production has been about one-third of the gross national product during the seven years from 1956 to 1962. Rice production has been decreasing in relative importance during this period. Upland food crops have been increasing in production rapidly, at the average rate of 26 per cent per year—becoming second in value of production in 1960. Fishery production has also shown a steady average increase of 6.34 per cent per year.

These findings indicate that agricultural development in Thailand has taken its first long stride, and that hunger is not a problem of Thailand. Table 2 contains data on the export value of agricultural products from 1956 to 1962.

TABLE 2. VALUE OF AGRICULTURAL, FORESTRY AND FISHERY EXPORTS, 1956-1962.

Products	1956	1957	1958	1959	1960	1961	1962	Average rate of increase
Million Baht								
Rice and rice products	2879.4	3638.9	2989.4	2603.9	2596.1	3630.0	3277.4	4.24
Upland food crops	282.6	271.6	427.4	553.9	951.3	1179.4	1092.7	26.21
Oil seeds products	222.9	192.4	160.8	203.7	185.9	229.4	300.6	
Fiber crops products	56.5	91.6	122.2	147.9	298.4	710.1	672.2	
Miscellaneous crops	126.4	149.5	123.9	74.5	84.3	68.2	90.7	-1.95
Rubber	1526.4	1410.0	1326.6	2336.1	2579.3	2130.0	2110.7	
Forestry products	564.6	466.9	399.6	394.1	552.8	403.2	311.1	
Livestock and live-stock products	198.9	198.3	173.9	291.3	365.7	411.6	310.9	11.42
Fishery products	85.7	69.0	35.8	29.8	34.0	41.3	41.2	-8.16
Total value of agricultural exports	6231.7	6488.2	5759.6	6635.0	7647.8	8803.2	8612.7	6.05
	94.12%	88.98%	93.01%	91.42%	90.80%	90.60%	93.06%	
Total exports	6716.5	7291.8	6092.6	7257.8	8422.3	9716.7	9254.8	6.32

The export value of agricultural products as seen in Table 2 is more than 90 per cent of the total exports. Rice is always first in the value of export, followed by rubber. The quantity of upland food crops exported has increased, relatively, to the extent that it became the third largest export commodity in 1958, and has amounted to approximately one-third of the value of rice exports, and one-eighth of total agricultural exports, since 1960. In spite of the increase in production, fishery exports have been decreasing at an average of about eight per cent per year. This indicates more consumption of fishery products within the country and seems to imply that the protein nutrient intake of the Thai people is increasing through this source of food. Other essential agricultural products are imported every year in order to supplement domestic production. Data on agricultural imports are gathered in Table 3.

TABLE 3. VALUE OF AGRICULTURAL IMPORTS, 1956-1962.

Products	1956	1957	1958	1959	1960	1961	1962	Average rate of increase
Million Baht								
Food crops	172.7	164.9	225.4	158.6	144.3	143.3	122.3	-3.42
Textile materials	1008.2	980.6	888.8	1001.5	1019.0	1253.2	1106.1	
Miscellaneous	468.8	580.4	576.9	593.4	596.5	688.7	733.8	
Livestock and								
Livestock products	311.2	396.8	898.8	425.5	430.4	423.4	468.3	7.47
Fishery products	26.4	27.3	52.9	95.2	68.2	60.8	55.9	24.34
Total value of agricultural imports	1987.3	2150.0	2142.8	2274.3	2258.5	2569.4	2486.4	2.91
Percentage	25.96%	25.18%	26.01%	25.30%	23.47%	24.98%	21.61%	
Total value of imports	7655.1	8537.0	8237.0	8988.3	9622.1	10287.3	11503.7	6.94
Percentage	100%	100%	100%	100%	100%	100%	100%	

The record shown in Table 3 reveals that one-fourth of the total imports are agricultural products. Of these, textile materials make up about one-half, and livestock and livestock products rank second (about one-fourth of the total agricultural products). The import of food crops has been declining at the average rate of 3.42 per cent per year.

RICE

Rice is the most important crop in the Thai nation. Although the production of upland food crops is increasing quite rapidly, it is unlikely that rice will be supplanted as the major food resource. Statistics of rice production are shown in Table 4.

Data from Table 4 show that since 1950 rice farm area has been increasing steadily at the average rate of 1.24 per cent per year, and the planted area and the harvested area have been increasing at the average rate of 1.98 and 1.83 per cent per year respectively. The increase in production of rice during the last 13 years is at the average rate of 4.74 per cent per year. The damage of planted area has risen as high as 18.6 per cent in a season.

In order to see clearly the relationship between production, consumption, and export of rice, the graphs of rice production and export are plotted as seen in Figure 1

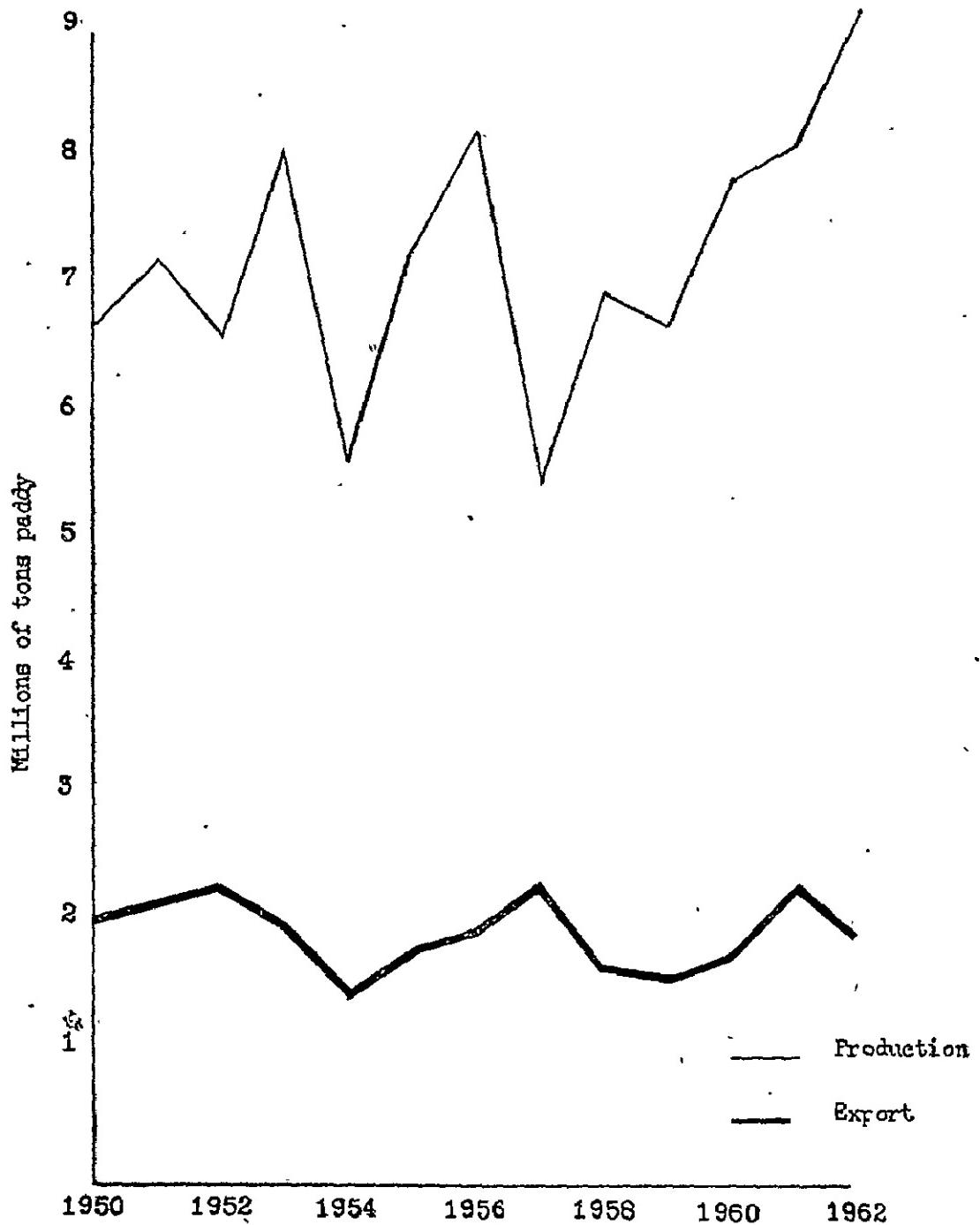


Figure 1. Graph of Rice Production and Export, 1950-1962.

TABLE 4. RICE: AREA, PRODUCTION (PADDY), AND MARKET VALUE AT WHOLESALE PRICES, 1950-1962.

Year	Rice farm area	Planted area	Harvested area	Dam- aged area	Average yield	Pro- duc- tion	Value
	1000 rais	1000 rais	1000 rais	per cent	Kg.per rai	1000 tons	Million bahts
1950/1951	38,507	34,625	30,914	4.43	205	6,782	5,190.6
1951/1952	39,183	37,245	35,851	3.62	204	7,325	6,006.8
1952/1953	39,745	33,551	32,064	4.42	206	6,602	4,818.2
1953/1954	40,594	38,575	37,068	3.90	222	8,239	5,321.2
1954/1955	41,377	34,732	28,274	18.61	202	5,709	4,709.9
1955/1956	40,215	36,060	33,598	6.81	218	7,334	6,331.7
1956/1957	40,968	37,648	36,013	4.35	230	8,297	7,129.8
1957/1958	41,523	31,717	26,794	15.69	208	5,570	5,690.3
1958/1959	41,774	35,987	32,306	10.22	218	7,055	5,859.4
1959/1960	42,572	37,909	32,893	13.50	206	6,770	5,716.0
1960/1961	43,236	37,008	35,270	4.70	222	7,834	7,144.9
1961/1962	43,629	38,619	35,335	8.51	231	8,177	8,966.7
1962/1963	44,545	41,534	38,681	6.87	239	9,254	8,838.3
Average rate of increase	1.24%	1.98%	1.83%			4.74%	2.97%

The graph in Figure 1 shows that the export of rice varies according to the production, but the fluctuation of export is not as great as that of the production.

With the growth of population at the average rate of 3 per cent per year it may seem that in the future rice production would be enough for consumption in the country and some surplus would still be left for export, as it has been in the past. But this can not always result, since land for rice farming is almost saturated, and only a little more land can be opened up for rice paddies. Measures must be taken to improve the efficiency of production, such as carrying out research on breeding for better strains, introducing to the farmers strains of rice suitable for their locality, and imparting information to them about soil conservation, fertilization, pest control, cultural practices and mechanization.

The Ministry of Agriculture has set the targets for rice production for the next three years to meet the needs of the nation, determined by the population growth at an average rate of about 3 per cent per year. The Ministry also desires to have a surplus for export of 1.2 million tons every year. The estimation for these targets is shown in Table 5.

TABLE 5. TARGETS OF RICE PRODUCTION OF THE DEPARTMENT OF RICE
1964-1967.

Year	Population	Rice for consumption	Rice for reproduction	Export	Target for production
Metric tons in paddy					
1964	29,700,000	5,625,000	800,000	1,820,000	8,240,000
1965	30,596,000	5,705,000	800,000	1,820,000	8,415,000
1966	31,509,000	5,968,000	800,000	1,820,000	8,588,000
1967	32,454,000	6,147,000	800,000	1,820,000	8,767,000

The estimation on the population in 1964-1967 is based on the population in 1963 with the rate of growth at 3 per cent per year. Taking rice for consumption per person per year as 125 kilograms (edible rice = 66 per cent of paddy), the targets for production in 1964-1967 are estimated to be as shown in the last column of Table 5. The target for rice production in 1967 as calculated in Table 5 is 8,767,000 metric tons of paddies. This will not be difficult to attain at all, because the production in 1963 which is the best year had reached 10.2 million metric tons (see Table 4), which is higher than the target.

The targets in Table 5 have been since then revised by the National Economics Development Board. The new target for rice production in 1966 has now been set at 9.5 million tons (10:53).

Efficiency of Rice Production.

In the 1961 annual report of the Division of Agricultural Economics, Ministry of Agriculture, it is revealed that only 51.50 per cent of the land area (165.4 million rais) is forest and grazing land, 21.3 per cent (68.4 million rais) is farm land, the rest is swamps, lakes, and unclassified land.

The Government of Thailand has the policy of holding the forest land to 50 per cent of the total land, and thus it is definite that only a little more land can be opened up for agricultural use. It is necessary, then, that the efficiency of agricultural production be increased. Table 6 compares efficiency of rice production among several rice growing nations. It reveals that Spain produces rice at the highest yield per unit area—1,018 kilograms per rai, 4.4 times that of Thailand in the same year, 1961. Italy and Japan rank second and third in efficiency in rice production, at 874 and 752 kg. per rai respectively. In order to improve the efficiency of agricultural production in Thailand, it would seem advisable that education for farmers should include current knowledge concerning agriculture such as use of better strains, soil conservation, fertilization, pest control, and co-operative operation. This may entail the extension of education for this occupational group to a level higher than

TABLE 6. FARMING IN THAILAND AND SELECTED COUNTRIES, 1959-1962.

Country	Area harvested			Production			Average yield		
	1959	1960	1961	1959	1960	1961	1959	1960	1961
	1,000 rais				1,000 tons			Kg. per rai	
Thailand	32,893	35,270	35,335	6,770	7,834	8,177	206	222	231
Burma	25,344	26,231	25,425	6,880	6,789	6,851	272	259	269
Fed. Malaya	2,362	2,400	2,431	903	975	926	382	406	381
Philippines	20,662	19,988	19,869	3,793	3,705	3,910	181	186	197
Taiwan	4,850	4,788	4,888	2,308	2,378	2,508	475	496	514
Japan	20,556	20,675	20,631	15,626	16,073	15,523	760	778	752
U.S.A.	4,012	4,031	4,019	2,433	2,476	2,458	606	614	611
Brazil	18,538	19,838	18,960	4,795	5,392	5,300	259	272	280
Spain	419	406	383	386	401	394	923	987	1,018
Italy	850	806	769	755	622	674	890	773	874
India	209,494	219,794	211,619	47,190	51,297	51,223	226	245	242
Pakistan	60,925	62,738	60,612	14,424	16,053	16,118	237	256	266

grade four where it stops now, so that they may have more time in school to learn about the topics which are so relevant to their occupation and general future well-being. The Government has established the policy of extending compulsory education to grade seven; but this will take effect slowly in each community as the level of the economy rises.

UPLAND CROPS

Upland crops have been increasing in quantity in recent years. As already mentioned in the previous part, the upland food crop alone, excluding fiber crops and oil seeds and coconuts, has been second in value of production since 1960:

Principal upland food crops which bring in incomes from export include maize, cassava, sugar cane, mung beans, white beans, red beans and other beans.

Garden crops include a great variety of leafy and stem vegetables, string beans, several species of eggplants, tomatoes, pumpkins, yam beans, sweet potatoes, and other potatoes.

Fruit orchards' produce reported in this study includes pineapples, watermelons, and several species of bananas. Statistics on oranges, mangoes, rambutan, lamyai and other fruits is not available.

Table 7 contains data on production of upland food crops.

TABLE 7. AREA PLANTED AND PRODUCTION OF PRINCIPAL FOOD CROPS
1952-1962.

Year	Upland food crops		Garden crops		Fruits	
	Area planted 1,000 rais	Production 1,000 tons	Area planted 1,000 rais	Production 1,000 tons	Area planted 1,000 rais	Production 1,000 tons
1952	1,032	1,588	*	*	*	*
1953	1,090	1,944	*	*	*	*
1954	1,221	2,575	*	*	*	*
1955	1,296	2,844	*	*	*	*
1956	1,545	4,137	*	*	*	*
1957	1,886	4,489	243	183.7	441	436.4
1958	2,143	4,728	272	221.4	426	413.6
1959	2,854	5,776	297	262.0	480	536.0
1960	3,545	6,465	381	333.8	679	802.8
1961	3,542	5,300	565	434.9	948	1,212.6
1962	3,763	4,687	740	547.0	916	1,091.3
Average increase	13.31 %	10.93 %	25.75 %	24.52 %	17.51 %	27.12 %

* Data not available

The figures contained in Table 7 show that the area used for planting upland food crops has been increasing at the average of 13.31 per cent per year, and the production of upland food crops has been increasing at the average of 10.93 per cent per year since 1952. The data on garden crops and fruits were not available until 1957. They also show steady increase both in area planted and production; garden crops increased at the average of 25.75 per cent per year in area planted and 24.52 in production, and fruits 17.51 in area planted and 27.12 in production. There is a considerable increase in efficiency of fruit production but a slight decrease in efficiency of production of food crops and garden crops.

Other principal crop statistics are shown in Table 8.

TABLE 8. AREA PLANTED AND PRODUCTION OF OTHER PRINCIPAL CROPS,
1952-1962.

Year	Oil seeds		Fiber crops		Rubber		Tobacco	
	Area planted	Production						
	1,000 rais	1,000 tons	1,000 rais	1,000 tons	1,000 rais	1,000 tons	1,000 rais	1,000 tons
1952	1,384	251.2	372	38.9	2,076	100.4	274	42.4
1953	1,394	279.7	340	42.6	2,126	98.1	338	49.8
1954	1,572	346.1	282	34.0	2,196	119.6	341	52.6
1955	1,601	365.4	270	36.2	2,281	133.3	353	55.9
1956	1,714	399.8	383	52.2	2,381	136.7	355	58.2
1957	1,925	433.7	685	464.8	2,441	136.0	386	66.0
1958	1,890	397.1	720	418.8	2,501	140.6	382	65.6
1959	1,917	397.8	940	474.2	2,541	174.0	388	67.1
1960	2,059	477.6	1,620	640.8	2,571	170.8	367	74.1
1961	1,786	366.5	2,389	621.7	2,621	186.1	256	48.4
1962	2,150	407.4	1,371	370.4	2,671	195.4	256	47.9

Table 8 indicates that land used in planting oil seeds has been increasing and that production, though fluctuating, has shown an increasing trend with the highest yield of 477,600 tons in 1960. The oil seeds include caster beans, groundnuts, sesame, soy beans and coconuts. Soy flour factories should be established to increase the demand for soy beans and thus to supplement the protein food supply for the nation. Japan has been ordering a large quantity of soy beans from the United States during the recent years. Soy beans from Thailand should be able to find a market in Japan as well.

The area of cultivation and the production of fiber crops have expanded greatly. The level of production in 1957 was nine times that of the previous year. The fiber crops include cotton, kapok and bombax, jute, kenaf and ramie. The production of fiber crops in 1960, the top yielding year, was 12 times that in 1956, and 19 times that in 1954. This increase is due to the demand of the world market. Kenaf has been particularly in demand, with the result that the price has been high and production has increased accordingly. In 1962, about 240,000 tons of kenaf were exported and 40,000 tons were used domestically.

Tobacco planting is not on a large scale as compared to other crops. The area planted and production of tobacco have been increasing, but then in 1961 they dropped sharply.

Rubber has been a big source of income in Thailand for a long time. The land used for planting rubber and the rate of its production have increased at the average rate of 2.48 and 6.99 per cent per year respectively. Its production details are shown in Table 9.

TABLE 9. AREA PLANTED, PRODUCTION, AND MARKET VALUE OF RUBBER,
1952-1962.

Year	Area planted	Tappable area	Average yield	Production	Market value
	1,000 rais	1,000 rais	Kg. per rai	1,000 tons	Million bahts
1952	2,076	1,693	59.30	100.4	1,035.1
1953	2,126	1,721	57.00	98.1	668.1
1954	2,196	1,763	67.84	119.6	965.2
1955	2,281	1,819	73.28	133.3	1,794.2
1956	2,381	1,889	72.37	156.7	1,521.5
1957	2,441	1,974	68.90	136.0	1,455.2
1958	2,501	2,039	68.96	140.6	1,335.7
1959	2,541	2,076	83.81	174.0	2,136.7
1960	2,571	2,126	80.33	170.8	2,203.3
1961	2,621	2,196	84.74	186.1	1,786.6
1962	2,671	2,281	75.24	195.4	1,707.8
Average rate of increase	2.48 %	3.01 %	6.09 %	6.99 %	

The data from Table 9 shows that during the 11 year-period from 1952 to 1962 there has been a steady increase in the area planted, the area tappable and the production of rubber. The tappable area increased at the average rate of 3 per cent per year, but the production and the average yield increased at the average rate of 7 per cent and 6 per cent per year, respectively. This indicates an increase in the efficiency of production. But the market value fluctuates considerably, and so the income of the nation from this source has varied to a certain degree. The manufacture of rubber products should be one means of stabilizing the price of rubber. The problems here lie in how to persuade foreign investors to use their capital in this line of industry and how to increase production of rubber in the area that is now being used for rubber plantations without opening up more land. The Government has provided subsidy support to rubber growers while introducing better species of stock, in order to promote greater yield per unit area.

FORESTRY

Each year during the last ten years, 1100 to 1200 million bahts worth of forestry products have been produced in Thailand. The major products are teak, yang, other timber, firewood, charcoal, bamboo and rattan. The production and value of teak and yang are reported in Table 10.

TABLE 10. PRODUCTION AND VALUE OF TEAK AND YANG CUT UNDER LICENSES, 1952-1962.

Year	Teak			Yang		
	Timber cut	Wholesale price	Market Value	Timber cut	Wholesale price	Market Value
	cu.m.	Bahts/m ³	1000 bahts	cu.m.	Bahts/m ³	1000 bahts
1952	261,306	1,121	292,924	253,476	44/8	113,557
1953	345,957	841	290,950	258,682	490	126,754
1954	358,878	864	310,070	291,035	497	144,644
1955	305,875	1,287	393,665	385,850	450	173,632
1956	200,295	1,150	230,339	340,044	420	142,818
1957	187,691	1,188	219,452	279,582	453	171,951
1958	181,261	1,125	203,919	418,326	403	168,585
1959	163,530	1,750	286,177	316,393	353	111,687
1960	153,664	2,350	361,110	320,833	399	128,012
1961	105,665	2,350	248,313	319,482	558	178,271
1962	123,324	2,400	295,978	377,959	498	188,224

The data in Table 10 show that the volume of production is declining, while the price is rising in teak, but both the production and price of yang are relatively unchanging, or fluctuating only a little. This seems to be the result of the Government's policy of keeping the amount of the forest area at not less than 50 per cent of the total area of the country. Production and value of other timber, firewood, charcoal, bamboo and rattan are reported in Table 11.

The statistics in Table 11 indicate that the production of saw timber has been declining, while charcoal production has remained relatively unchanged. Production of firewood shows a slight increase. Bamboo and rattan lead other forestry products in the rate of production increase, their usage in 1962 being 20 times that in 1952.

Other forestry product include yang oil, seed lac and sticklac, shellac, gum damar and gum benjamin. Of these, only the lacs account to a substantial value of production, yielding an amount approximately the same as the value of charcoal production.

TABLE 11. PRODUCTION AND VALUE OF SAW TIMBER, FIREWOOD, CHARCOAL AND BAMBOO EXTRACTED, 1952-1962.

Year	Other timber	Firewood	Charcoal	Bamboo and rattan
				Production
	cu.m.	cu.m.	cu.m.	Stems
1952	1,109,345	1,206,144	609,134	1,195
1953	1,009,345	1,206,628	930,858	1,783
1954	946,989	1,063,385	665,175	4,727
1955	920,716	1,176,644	585,320	8,973
1956	960,696	1,030,767	570,875	5,258
1957	1,019,623	1,204,385	505,157	7,950
1958	1,101,295	1,123,417	602,563	9,234
1959	733,420	1,147,106	628,046	11,300*
1960	790,857	1,191,342	560,234	12,621*
1961	857,781	1,317,325	762,330	13,942*
1962	856,812	1,446,005	664,512	22,607*
		Value — 1000 bahts		
1952	456,070	50,658	84,060	5,472
1953	491,188	69,984	128,458	7,133
1954	418,992	60,613	99,776	19,334
1955	376,185	67,657	87,798	26,919
1956	351,367	51,540	102,758	22,609
1957	397,889	54,197	88,402	34,822
1958	434,607	50,554	105,449	40,448
1959	227,546	51,620	113,048	45,439*
1960	307,406	53,610	113,284	50,863*
1961	365,838	59,280	133,408	56,186*
1962	326,994	62,178	116,290	91,106*

Estimated by Division of Agricultural Economics.

LIVESTOCK

Although the Thai people have not made a main occupation out of livestock raising, they keep some cattle, buffaloes and swine on their farms. Most cattle and buffaloes are raised for the purpose of using their labor. Swine are raised as a side line on upland farms and in some compounds (yards). Table 12 gives data on the number of animals on farms all over the country.

TABLE 12. NUMBER OF ANIMALS ON FARMS, 1954-1962.

Year	Elephants	Horses	Mules	Asses	Buffaloes	Cattle	Swine
1954	12,482	195,239	533	350	5,586,214	4,328,513	3,141,456
1955	12,471	178,189	376	249	5,959,570	4,724,018	2,910,630
1956	12,467	196,910	743	444	5,742,900	4,637,309	3,031,285
1957	12,562	186,772	656	385	5,938,077	4,983,417	3,738,672
1958	12,438	187,178	474	343	6,293,620	5,044,807	3,921,926
1959	12,300	184,604	467	362	6,421,253	5,114,567	4,205,620
1960	12,595	179,346	898	216	6,666,120	5,264,765	4,231,248
1961	12,613	179,369	904	230	6,749,344	5,099,181	5,246,230
1962	12,099	187,137	1,169	239	6,914,774	5,440,784	4,282,780

The content of Table 12 shows that the number of buffaloes and of cattle on the farms have increased more slowly than the number of swine, while the number of elephants and of horses do not show any increase.

Table 13 gives data on the number of animals slaughtered compared to the number existing.

TABLE 13. NUMBER OF ANIMALS SLAUGHTERED COMPARED TO NUMBER OF ANIMALS ON FARMS, 1954-1962.

Year	Buffaloes		Cattle		Swine	
	Slaughtered	On farms	Slaughtered	On farms	Slaughtered	On farm
Number of heads						
1954	27,957	5,586,214	142,014	4,328,513	1,207,506	3,141,456
1955	47,227	5,959,570	162,300	4,724,018	1,615,119	2,910,630
1956	49,960	5,742,900	190,737	4,637,309	1,440,442	3,031,285
1957	51,186	5,938,576	183,571	4,983,417	1,482,121	3,738,672
1958	57,718	6,293,620	183,527	5,044,807	1,657,473	3,921,926
1959	61,532	6,421,255	241,222	5,114,567	1,859,251	4,205,620
1960	80,575	6,666,120	234,752	5,264,765	1,705,105	4,231,248
1961	78,747	6,749,344	222,319	5,099,181	1,729,015	5,246,230
1962	77,296	6,914,774	221,872	5,440,784	1,766,287	4,282,780
Average rate of increase	15.42	2.75	6.41	2.98	5.64	4.72

The figures from Table 13 show that during 1954-1962 the rate of increase in consumption of buffaloes was much greater than the rate of increase in the number raised on farms — 15.42 and 2.75 per cents per year, respectively. The rate of increase in the number of

cattle slaughtered was higher than the rate of increase in the number raised (6.41 per cent and 2.98 per cent), while the rate of increase in the number of swine slaughtered was slightly higher than the rate of increase in the number kept on farms (5.64 per cent and 4.72 per cent).

These findings indicate that the number of animals slaughtered yearly has been increasing faster than the population of living animals has increased; thus the expansion of livestock farming needs to be given serious consideration. Table 14 shows the comparison between the number of animal slaughtered in Bangkok and in the whole Kingdom between 1954-1962.

TABLE 14. NUMBER OF ANIMALS SLAUGHTERED IN BANGKOK AND IN THE WHOLE KINGDOM, AND THE TOTAL VALUE FROM 1954-1962.

year	Number of buffaloes slaughtered		Number of cattle slaughtered		Number of swine slaughtered		Total Value for all animals 1000 bahts
	Bangkok	Country as a whole	Bangkok	Country as a whole	Bangkok	Country as a whole	
1954	15,542	27,957	22,531	142,014	383,888	1,207,506	650,952
1955	17,248	47,227	20,047	162,300	361,285	1,615,119	1,062,030
1956	15,275	49,960	16,988	190,737	386,020	1,440,442	1,071,711
1957	14,456	51,186	14,663	183,571	412,867	1,482,121	1,085,401
1958	15,446	57,718	10,654	183,527	316,911	1,657,473	1,004,503
1959	15,921	61,532	28,741	241,222	462,405	1,859,251	1,149,665
1960	35,096	80,575	48,401	234,752	613,134	1,705,105	1,275,428
1961	35,369	78,747	40,926	222,319	553,122	1,729,015	1,328,707
1962	36,522	77,296	52,590	221,872	506,232	1,766,287	1,261,478

The figures in Table 14 show that Bangkok residents consume a disproportionately greater share of the total livestock slaughtered than the residents elsewhere in the Kingdom: six percent of the total population consumed 47% of the buffaloes, 24% of the cattle, and 29% of the swine in 1962. If the people outside of the Bangkok area consumed as much proportionately, it would be necessary to increase the number of animals slaughtered to about 600,000 buffaloes, 877,000 cattle, and 8,433,000 swine, just to meet the current demand for animal meat in the country.

The data from Table 15 show that the export of live swine has increased greatly since 1958. The average rate of increase in number of live swine exported from 1958-1962 is about 38 per cent per year, but the average rate of increase in swine raising was only 4.7 per cent per year. If the present trend continues there will be a severe shortage of swine in the near future.

TABLE 15. NUMBER OF SWINE ON FARMS, SLAUGHTERED, EXPORTED AND THE VALUE OF EXPORT, 1954-1962.

Year	Number of swine			Value of export bahts
	On farms	Slaughtered	exported	
1954	3,141,456	1,207,506	17,085	10,864,000
1955	2,910,630	1,615,119	10,060	5,282,000
1956	3,031,285	1,440,442	—	—
1957	3,738,672	1,482,121	120	52,000
1958	3,921,926	1,657,473	104	2,000
1959	4,205,620	1,859,251	55,135	33,915,000
1960	4,231,248	1,705,105	38,954	26,279,000
1961	5,246,230	1,729,015	80,713	38,354,000
1962	4,282,780	1,766,287	110,007	79,267,000

Considering the rate of population growth at three per cent per year, it might seem that the supply of swine is satisfying the demand of the nation. But changing expectation, tastes, level of education, and supply of other food items can result in a change in demand for pork, so that even a growth rate of 10% in swine production, for example, compared to a population increase of 3% may be inadequate. Table 16 deals with statistics on buffaloes.

TABLE 16. NUMBER OF BUFFALOES ON FARMS, SLAUGHTERED, EXPORTED AND VALUE OF THE EXPORT, 1954-1962.

Year	Number of buffaloes			Value of export Baht
	On farms	Slaughtered	Exported	
1954	5,586,214	27,957	7,073	17,667,000
1955	5,959,570	47,227	22,397	40,882,000
1956	5,742,900	49,960	40,958	66,760,000
1957	5,938,007	51,186	32,066	57,352,000
1958	6,293,620	57,718	54,160	59,356,000
1959	6,421,253	61,532	50,018	84,846,000
1960	6,666,120	80,575	100,119	99,322,000
1961	6,749,344	78,747	68,872	119,469,000
1962	6,914,774	77,296	61,591	102,427,000

From Table 16 it can be seen that the export of live buffaloes has shown a gradual increase, except in the year 1960 when the number for export was unusually large. The

average rate of increase in the number of buffaloes exported between 1955-1962 was 26.4 per cent per year, compared to a 2.75 per cent per year rate of increase in the number of buffaloes kept on farms. Thus the problem of diminishing meat supply with respect to buffaloes is much the same as that for swine.

The buffaloes on the farms are raised mainly for the propose of labor, not for food. When machinery becomes more widely used during the agricultural expansion due to the full use of irrigation projects, it should be expected that farmers may not want to keep buffaloes on the farms, and thus this source of food would come to an end. Measures should be taken to encourage either the expansion of cattle farms or the tradition of keeping the buffaloes on the farms. Statistics of cattle are reported in Table 17.

TABLE 17. NUMBER OF CATTLE ON FARMS, SLAUGHTERED, EXPORTED AND THE VALUE OF EXPORT, 1954-1962.

Year	Number of cattle (bulls and cows)			Value of export Baht
	On farms	Slaughtered	Exported	
1954	4,328,513	142,014	2,321	4,566,000
1955	4,724,018	162,300	1,753	3,262,000
1956	4,637,309	190,737	2,196	3,321,000
1957	4,983,417	183,571	111	272,000
1958	5,044,807	183,527	143	256,000
1959	5,124,567	241,222	2,298	2,540,000
1960	5,264,765	234,752	284	458,000
1961	5,099,181	222,316	55	46,000
1962	5,440,784	221,872	10	6,000

The increase in the number of cattle (bulls and cows) raised on farms is of a lower rate than the increase in the number of cattle slaughtered, (average increase of 2.98 per cent and 6.41 per cent from per year respectively.) The number of cattle exported and the income obtained from this export have been almost negligible since 1957 (with the exception of 1959, when there was a surge of exports).

The expansion of cattle farming should be encouraged because, as has been shown in the Report on the Nutritional Needs of Children, a lack of protein—especially from animal sources—prevails everywhere in Thailand. An increase in the production and consumption of meat should be encouraged to improve children's nutritional status, which affects their potential for development.

Because of a lack of milk for the children, the possibility of increasing the number of dairy farms should be considered. This would, of course, necessitate the development of a modern dairy industry, which requires a large sum of capital. Dairy farming would open up a new

line of work which is relatively unfamiliar to the Thai people. The grazing land in the northeastern plateau would seem to be a very desirable place for this industry. An indication of the importance of dairy products in Thailand is provided in the data on imports of milk and milk products shown in Table 18.

TABLE 18. IMPORTS OF MILK AND MILK PRODUCTS, 1952-1962.

Year	Milk and Cream				Total		
	Fresh	Condensed & evaporated	Dry	Cheese, butter, & ghee	Other milk food	Total	
	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts	
	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts	1000 Bahts
1000 Bahts							
1952	1,080	156,102	7,459	3,294	17,901	185,836	
1953	1,082	184,073	11,259	2,271	27,433	226,118	
1954	5,658	238,305	22,112	4,081	35,314	305,470	
1955	3,009	228,251	27,008	3,298	31,735	294,301	
1956	4,785	226,404	13,904	4,291	41,015	290,399	
1957	6,446	301,755	23,068	4,377	42,811	379,457	
1958	8,638	294,666	22,316	6,052	47,313	378,985	
1959	10,296	314,395	37,635	5,417	39,290	407,033	
1960	8,862	317,878	31,972	5,770	47,466	441,948	
1961	12,245	306,111	43,397	7,780	40,157	409,690	
1962	14,760	345,206	42,719	7,429	44,402	454,516	
Average rate of increase	56.80%	9.02%	27.14%	12.38%	11.50%	82.5	1961
+10% I.P.T.	1080	300,411	111+	1000	1000	1000	1000

Data from Table 18 reveal that during 1952-1962 the consumption of milk and milk products increased greatly—especially the consumption of fresh milk, which increased at the average rate of 56.80 per cent per year, and dry milk at 27.14 per cent per year. The total imports of milk and milk products in 1962 cost 454.5 million bahts, 2.5 times of that in 1952. Condensed and evaporated milk are the major imports among dairy products. The livestock industry also yields incomes from other livestock products in addition to food. Table 19 lists export data for livestock products.

The data from Table 19 show that the export of meat, fresh and prepared, is almost negligible, but that feathers, hides, and animal bone exports account for substantial income.

TABLE 19. THE EXPORTS OF LIVESTOCK PRODUCTS, 1954-1962.

Year	Horn, cattle and buffalo		Lard		Leather	
	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts
1954	598	2,563	791	5,901	60	952
1955	673	1,846	942	6,529	99	2,135
1956	532	1,657	118	1,214	106	1,564
1957	446	1,795	87	1,175	132	2,304
1958	469	1,600	8	80	130	1,686
1959	507	1,238	55	472	281	3,981
1960	257	841	50	401	269	4,186
1961	189	666	32	266	239	3,197
1962	532	1,324	12	138	341	4,375

Year	Cow hide, undressed		Buffalo hide, undressed		Meat, fresh and prepared		Feathers, unworked		Animal bones	
	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts
1954	1,731	14,262	3,023	26,578	21	455	367	6,628	4,171	6,579
1955	2,442	23,041	4,002	30,953	50	1,074	456	8,882	7,958	9,518
1956	1,501	14,483	3,817	22,815	227	3,470	478	9,814	5,507	5,622
1957	2,589	20,381	3,470	20,819	57	1,117	394	10,471	7,896	8,284
1958	2,263	22,233	3,290	16,962	86	927	349	5,834	7,760	8,651
1959	2,786	34,524	5,299	29,528	84	1,594	405	9,501	7,786	8,225
1960	2,653	32,136	5,341	41,832	54	954	269	8,444	9,430	11,217
1961	2,832	32,421	5,275	40,713	146	2,610	390	15,493	9,257	12,402
1962	2,104	23,922	4,778	26,310	93	2,047	411	14,025	3,831	5,034

The government of Thailand has realized the importance of the health of animals. Centers have been established in the country to check the spread of the epidemic diseases. Table 20 contains data on the deaths of animals due to epidemic diseases, and a report on vaccinations.

The death rate of swine from epidemic diseases compared to the number of these animals vaccinated is greater than the same comparison for buffaloes, which in turn is greater than that for cattle. It can be concluded that more research on effective vaccines is needed.

The statistics relating to poultry production are presented separately in Table 21.

TABLE 20. REPORTED DEATHS OF LIVESTOCK FROM EPIDEMIC DISEASES,
AND THE NUMBER OF ANIMALS VACCINATED, 1954-1962.

Year	Deaths from epidemic diseases			Number of animals vaccinated		
	Buffaloes	Cattle	Swine	Buffaloes	Cattle	Swine
1954	8,472	2,721	22,877	469,941	244,686	118,776
1955	8,062	2,496	4,624	547,319	297,116	80,219
1956	8,504	2,789	807	554,629	250,549	64,420
1957	10,299	2,126	3,887	545,246	198,232	53,233
1958	11,650	2,274	10,067	644,030	281,619	118,106
1959	9,783	2,441	3,812	739,203	311,964	141,507
1960	10,223	2,206	3,378	679,297	281,776	116,538
1961	12,070	2,158	3,309	823,117	334,200	157,258
1962	10,745	1,873	2,777	949,680	376,371	139,736

TABLE 21. NUMBER OF DOMESTIC, FOWLS, BANGKOK WHOLESALE PRICES,
AND EXPORT, 1954-1962.

Year	Number on farms			Wholesale price				Export
	Chickens	Ducks	Geese	Live chickens	Live ducks	Duck eggs	Chickens & ducks	
	1000	birds		Baht/kg.		Baht/1000	1000 birds	1000 bahts
1954	22,992*	—	363	10.09	10.72	460.62	483	6,520
1955	21,049*	—	409	11.81	10.27	473.75	1,111	21,797
1956	29,872*	—	486	9.95	10.07	516.35	831	8,607
1957	23,861	9,410	500	12.02	12.97	512.40	1,088	10,897
1958	28,810	8,617	520	11.32	13.16	528.30	972	8,005
1959	24,632	6,324	540	11.24	12.24	634.30	1,158	8,830
1960	24,003	8,719	560	11.42	9.95	500.00	916	8,309
1961	25,170	7,236	566	9.64	11.47	440.35	780	8,436
1962	23,224	7,029	575	9.64	9.55	478.40	597	5,570

* This number includes ducks.

The number and the price of fowls as seen in Table 21 fluctuated slightly between 1954 to 1962. The export has been decreasing since 1959. The data also shows a gradual increase in goose raising. Improvement in packing and storage techniques may raise the quantity available for export as well as that for domestic distribution. There is a need to improve

the efficiency of raising chicken, broilers and fryers so that the price of chicken may be lowered, which will result in expanded markets domestically and for export.

Statistics on the production and consumption of hen eggs is not available. Farmers bring their products to the local markets and the commodities are sold without any record. This is true with most products in Thailand which are not traded through the central markets. Duck eggs have a central market in Bangkok, and yet a great number of them are traded locally and are not recorded. Table 22 shows the number of duck eggs which flow through the central market and the quantity of duck eggs exported for hatching and for food.

TABLE 22. NUMBER OF DUCK EGGS TRADED THROUGH CENTRAL MARKET IN BANGKOK, AND QUANTITY OF DUCK EGGS EXPORTED FOR HATCHING AND FOR FOOD: 1954-1962.

Year traded through central market in Bangkok	Number of duck eggs traded through central market in Bangkok	Quantity and value of duck eggs exported	
		Eggs for hatching	Eggs for food
		Tons	Bahts
1954	*	47	787,000
1955	*	1,456,000	27,504,000
1956	*	92	933,000
1957	*	107	1,070,000
1958	*	139	963,000
1959	2,498,326	1,565,000	8,349
1960	172,281,770	1,658,000	16,089
1961	159,628,555	184	2,597,000
1962	103,505,616	102	2,190,000
1963	—	—	4,871
			39,586,000

The figures for number of duck eggs were obtained from the Central Market for Duck Eggs in Bangkok, and the data for exported eggs were obtained from export statistics of the Ministry of Economics Affairs. One ton of eggs contains about 15,000 eggs. In 1960, about 16,246 tons of eggs (243,690,000) were exported, but only 172,281,770 eggs were traded through the Central Market. Of the number of eggs traded through the Central market only a part was exported. This fact is brought up to illustrate the insufficiency of some records, especially those of foods which are traded locally.

FISHING

Fishing is a traditional occupation in Thailand and is based on local methods. Fishing is not a new occupation for Thailand, having 2614 kilometers of coastline along both the Gulf of Siam and the Indian Ocean, but the catch formerly has been for use of the people along the sea coasts. When it becomes difficult to find food on land, the Thai

people begin going out to the deeper sea for more fish. This tendency is also promoted by more widespread knowledge of how fish contribute to an adequate diet, and by greater availability of mechanized fishing craft.

Every Thai individual, regardless of religion, eats fish, from either fresh water or sea water, depending upon the geographical locality of his home.

Fresh water fish can be found anywhere inland where there is water, but there has been no concerted attempt to conserve the supply. All sizes have been taken without discrimination. Fish ponds and fish farms have been encouraged by the Government. Fish fry are cultured or imported and distributed by the Government. In addition to the fish in the swamps, lakes, canals, rivers and ponds, fish fry have been distributed in the reservoirs which have been already completed and will be distributed in those now under construction. It is hoped that these fry will increase the quantity of fresh water fish for the Thai nation. Until now the quantity of the catch has not been large compared with that of other countries. This may be because the fishing public has not used discretion in allowing small fish to develop before being caught, and because of a limited technology in this kind of enterprise.

Table 23 gives figures on the tonnage and value of commercial fish landed from 1954 to 1962.

TABLE 23. ESTIMATED TONNAGE AND VALUE OF FISH AND SHELLFISH LANDED, 1954-1962.

Year	Marine fishes		Fresh water fishes		Total	
	Quantity 1000 tons	Value Million baht	Quantity 1000 tons	Value Million baht	Quantity 1000 tons	Value Million baht
1954	166	581	63	347	229	928
1955	151	604	62	372	213	976
1956	152	684	66	462	218	1,146
1957	171	735	64	455	235	1,190
1958	145	725	51	428	196	1,153
1959	148	754	57	479	205	1,233
1960	146	832	73	580	219	1,412
1961	233	1,029	72	542	305	1,571
1962	270	1,106	70	537	340	1,643
Total						
1962	11	11	53	53	53	167

Table 23 shows that the landing of marine fish in 1962 was almost double that of 1960, while the catch of fresh water fish did not increase to the same extent. This may have been due to the increase in the number of mechanized fishing boats which made it possible to expand deep sea fishing. All boats in Thailand must be registered. Table 24 lists the number of fishing boats registered from 1954 to 1961.

TABLE 24. NUMBER OF BOATS REGISTERED FOR FISHING, 1954-1961.

Year	Mechanized boats		Non-mechanized boats		Total	
	Number	Gross tonnage	Number	Gross tonnage	Number	Gross tonnage
1954	586	11,001	2,936	18,182	3,522	29,183
1955	645	12,098	3,355	19,960	4,000	32,058
1956	1,082	14,232	2,068	15,557	3,150	29,789
1957	1,769	20,722	1,582	10,166	3,351	30,888
1958	1,832	18,480	1,442	9,771	3,274	28,252
1959	2,557	21,918	1,020	7,219	3,577	29,137
1960	3,551	27,328	868	6,208	4,419	33,536
1961	4,443	30,295	523	3,395	4,966	33,690

The increase in the number of mechanized fishing boat seen in Table 24 is very large. The registered number in 1961 is four times that in 1956 and eight times that in 1954, and the gross tonnage registered in 1961 is twice that in 1956 and thrice that in 1954. The non-mechanized boats have been decreasing in number, while the number of total fishing boats increases. This seems to mark the beginning of deep sea fishery in Thailand. Table 25 contains data on number and area of fish ponds, privately owned; and the number and area of the Government fish ponds.

TABLE 25. NUMBER AND AREA OF FISH PONDS; PRIVATE OWNERSHIP, AND THE NUMBER AND AREA OF GOVERNMENT FISH PONDS, 1953-1962.

Year	Private fish ponds		Government fish culture ponds	
	Number	Area, 1000 sq. meters	Number	Area, 1000 sq. meters
1953	3,977	989.0	264	185.1
1954	*	*	264	185.1
1955	6,088	2,573.4	264	185.1
1956	7,769	1,703.9	264	185.1
1957	5,167	2,768.5	264	210.5
1958	2,688	1,462.8	264	210.5
1959	2,802	9,198.8	562	547.8
1960	4,769	10,241.1	562	547.8
1961	1,865	947.6	562	547.8
1962	1,788	2,150.0	562	547.8

* Data are not available.

Statistics in Table 25 shows that private fish ponds have been decreasing in number since 1956; though the number of Government fish ponds in 1962 was double those existing in 1958. The decrease of private ponds may have been due to the negative attitude of the Thai people toward the taste of tilapia which was introduced and encouraged by the Government in 1949. It can be seen from Table 26 that the number of tilapia fish fry distributed to fish raisers dropped from 7,259,000 in 1955 to 397,000 in 1960.

TABLE 26. FISH FRY DISTRIBUTION, 1949-1962.

Year	Tilapia	Common carp	Chinese carp	Others	Total
1949	1,000	70,000	84,000	38,000	193,000
1950	2,000	86,000	449,000	89,000	626,000
1951	5,000	48,090	662,000	49,000	764,000
1952	370,000	187,000	405,000	147,000	1,046,000
1953	3,977,000	147,000	420,000	51,000	4,595,000
1954	4,434,000	330,000	656,000	59,000	5,479,000
1955	7,259,000	276,000	489,000	83,000	8,107,000
1956	5,049,000	363,000	240,000	176,000	5,828,000
1957	1,888,000	332,000	508,000	286,000	3,014,000
1958	3,164,000	462,000	519,000	223,000	4,368,000
1959	1,038,000	412,000	—	951,000	2,401,000
1960	397,000	364,000	478,000	1,432,000	2,671,000
1961	544,000	449,000	150,000	194,000	1,337,000
1962	471,000	586,000	160,000	1,398,000	2,615,000

Common carp seems to be the fish that is growing popularity with farmers. The number of common carp fish fry distributed increased steadily from 48,000 in 1951 to 586,000 in 1962. Chinese carp, seemed to decline in popularity in 1961 and 1962. The completion of dams may call for an increase in the number of fish fry distributed.

Table 27 on the export of fishery products reveals that the export of fresh fish has been increasing since 1952. The amount of tonnage in 1962 was six times that in 1952, and the value of the sale in 1962 was 13 times that in 1952. These facts foretell a very promising future for deep sea fishing as well as for the fish farm industry.

TABLE 27. THE EXPORT OF FISHERY PRODUCTS, 1950-1962^a

Year	Fresh fishery products		Salted fish		Fish, dried, salted, smoked		Mussel dried		Others	
	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts	Tons	1000 bahts
1950	568	1,348	14,529	14,419	1,823	2,656	658	2,201	43	66
1951	1,221	4,587	19,969	19,805	3,800	6,581	376	1,178	133	184
1952	928	1,945	20,992	18,724	3,541	4,434	128	302	32	39
1953	1,755	2,528	15,634	41,069 ^b	2,804 ^b	4,423 ^b	1154 ^b	1,745 ^b	62 ^b	1416 ^b
1954	2,076	2,614	23,566	82,244	3,596	12,575	221	1,609	188	731
1955	2,894	4,513	17,257	35,866	2,584	6,250	145	1,102	10	186
1956	3,260	9,802	16,927	61,201	3,639	11,986	182	1,034	160	1,680
1957	3,804	11,084	11,524	41,988	3,680	13,255	150	1,266	113	1,451
1958	4,046	11,487	14,506	13,257	3,641	10,187	74	1,563	92	1,278
1959	4,412	16,389	893	2,658	3,212	8,260	127	1,011	228	1,244
1960	3,943	18,355	10,006	3,177	2,854	7,816	122	1,076	963	3,993
1961	5,854	25,532	686	2,856	2,564	7,692	212	1,644	1,095	4,128
1962	5,894	25,358	62	1,200	1,592	4,823	153	1,024	1,278	9,831
Total	19,701	101,574	101,012	101,101	101,101	101,101	101,101	101,101	101,101	101,101
1950-1954	10,141	19,045	19,045	19,045	19,045	19,045	19,045	19,045	19,045	19,045
1955-1959	10,647	10,647	10,647	10,647	10,647	10,647	10,647	10,647	10,647	10,647
1960-1962	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
1950-1962	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

Reference: ^a Data from the Ministry of Public Health, Department of Fisheries, ^b Data from the Ministry of Public Health, Department of Fisheries, ^c Data from the Ministry of Public Health, Department of Fisheries, ^d Data from the Ministry of Public Health, Department of Fisheries, ^e Data from the Ministry of Public Health, Department of Fisheries, ^f Data from the Ministry of Public Health, Department of Fisheries, ^g Data from the Ministry of Public Health, Department of Fisheries, ^h Data from the Ministry of Public Health, Department of Fisheries, ⁱ Data from the Ministry of Public Health, Department of Fisheries, ^j Data from the Ministry of Public Health, Department of Fisheries, ^k Data from the Ministry of Public Health, Department of Fisheries, ^l Data from the Ministry of Public Health, Department of Fisheries, ^m Data from the Ministry of Public Health, Department of Fisheries, ⁿ Data from the Ministry of Public Health, Department of Fisheries, ^o Data from the Ministry of Public Health, Department of Fisheries, ^p Data from the Ministry of Public Health, Department of Fisheries, ^q Data from the Ministry of Public Health, Department of Fisheries, ^r Data from the Ministry of Public Health, Department of Fisheries, ^s Data from the Ministry of Public Health, Department of Fisheries, ^t Data from the Ministry of Public Health, Department of Fisheries, ^u Data from the Ministry of Public Health, Department of Fisheries, ^v Data from the Ministry of Public Health, Department of Fisheries, ^w Data from the Ministry of Public Health, Department of Fisheries, ^x Data from the Ministry of Public Health, Department of Fisheries, ^y Data from the Ministry of Public Health, Department of Fisheries, ^z Data from the Ministry of Public Health, Department of Fisheries.

Source: ^a Data from the Ministry of Public Health, Department of Fisheries, ^b Data from the Ministry of Public Health, Department of Fisheries, ^c Data from the Ministry of Public Health, Department of Fisheries, ^d Data from the Ministry of Public Health, Department of Fisheries, ^e Data from the Ministry of Public Health, Department of Fisheries, ^f Data from the Ministry of Public Health, Department of Fisheries, ^g Data from the Ministry of Public Health, Department of Fisheries, ^h Data from the Ministry of Public Health, Department of Fisheries, ⁱ Data from the Ministry of Public Health, Department of Fisheries, ^j Data from the Ministry of Public Health, Department of Fisheries, ^k Data from the Ministry of Public Health, Department of Fisheries, ^l Data from the Ministry of Public Health, Department of Fisheries, ^m Data from the Ministry of Public Health, Department of Fisheries, ⁿ Data from the Ministry of Public Health, Department of Fisheries, ^o Data from the Ministry of Public Health, Department of Fisheries, ^p Data from the Ministry of Public Health, Department of Fisheries, ^q Data from the Ministry of Public Health, Department of Fisheries, ^r Data from the Ministry of Public Health, Department of Fisheries, ^s Data from the Ministry of Public Health, Department of Fisheries, ^t Data from the Ministry of Public Health, Department of Fisheries, ^u Data from the Ministry of Public Health, Department of Fisheries, ^v Data from the Ministry of Public Health, Department of Fisheries, ^w Data from the Ministry of Public Health, Department of Fisheries, ^x Data from the Ministry of Public Health, Department of Fisheries, ^y Data from the Ministry of Public Health, Department of Fisheries, ^z Data from the Ministry of Public Health, Department of Fisheries.

PROVISIONS FOR IMPROVEMENT

The National Economic Development Board (10:47) classifies the development of agriculture in Thailand into four categories:

1. The development of natural resources, such as land, forests, water resources, and wild life. Government activities in this category include irrigation, forestry, fisheries, and land development.

2. Research and experimentation in new agricultural techniques in order to bring about reforms in production methods, increase productivity, improve the quality of yields, stimulate the production of new and improved crops and more extensive breeding of animals. This requires a great deal of time and, of course, involves long-term efforts. Research and experimentation are imperative if Thailand is to succeed in producing enough for its increasing population, and in insuring its ability to compete in world trade.

3. Agricultural promotion and the diffusion of information are two principal means by which the Government can render effective service to the country's agricultural population.

4. The improvement of the farmers' income and welfare through producer cooperatives and other farmer organizations, low interest agricultural credit, and land ownership. It is a declared policy of the Government that each farmer should be able to own a piece of land that can yield a livelihood. Furthermore, the farmer should be greatly benefited by other Government development programs and services, such as the development of highways and feeder roads, of industries based on agricultural products, and of expanded social services.

The policy objectives of the agricultural development plan for 1964—1966 as set forth by the Government (10:49) are as follows:

1. To expand agricultural production and exports, to improve the quality of important farm products, and to diversify output in order to achieve increasing national income and a higher per capita income for the country's agricultural population.

2. To improve production techniques so that output per unit area and income from production will be increased.

3. To manage and develop natural resources valuable to agriculture, such as soil, forests and water so that they can contribute most effectively to the economic well-being of the country. In the development of natural agricultural resources, it is necessary to conserve certain areas in the interest of long-term production capabilities.

4. To bring improvements in social conditions to rural areas, so that Thai farmers may enjoy a higher standard of living, including essential welfare services. The Government also aims at fostering a strong sense of national unity and a cooperative spirit among farmers.

5. To promote farm institutions such as cooperatives, young farmers' associations and agricultural credit groups, and to promote a sound system of land tenure.

6. To promote the status of agricultural employment, economically and socially, and to stimulate commercial activities in agricultural products.

7. To ensure that the farmer receives equitable remuneration for his labor and that he will not be at a disadvantage in marketing his products, in the leasing of land and in obtaining loans from private lenders.

8. To expand and to improve the efficiency of Government agencies and public enterprises which serve the agricultural population, so that they will be more effective in the fulfilment of their tasks.

Povisions for the improvement of agriculture have been made by the Government through three main channels—the Ministry of Agriculture, the Ministry of Interior, and the Ministry of Education.

The Ministry of Agriculture.

The Ministry of Agriculture gives direct support to agricultural producer: several irrigation projects have been launched and many dams (which provide hydroelectric power which will be used to process agricultural products) have been finished, including the Bhumipol Dam; quite a number of agricultural experimentation centers have already been established in the provinces; campaigns concerning conservation and restoration of forests have been made; deep sea fishing and fish farms have been introduced and encouraged; and one specific project for youths, the 4-H club program, has been supported.

Irrigation projects may be grouped into four catagories: State Irrigation Projects, Public Irrigation Projects, Tank Irrigation Projects, and Reservoir Projects, Table 28 lists major irrigation projects and their capacities.

Figures in Table 28 show that various irrigation projects which have been completed and those which are under construction cover an irrigable area of more than 12 million rais, and hold a water capacity of 9,900 million cubic meters. The Bhumipol and Kang Krachan Dams, in addition to being part of irrigation projects, yield a power generation of 564,000 kilowatts (560,000 and 4,000, respectively).

The work of the agricultural experimentation centers results in an increased use of better strains and of techniques which increase the efficiency of production, such as fertilization, pest control, and mechanization. Recently more farm machinery and appliances have been used in Thailand. Table 29 gives statistics on the imports of farm machinery and appliances.

Modernization of agricultural methods has been increasing steadily, though slowly. Data from Table 29 show that the imports of machinery and appliances for preparing and cultivating the soil in 1962 cost three times that in 1953, and there were no imports in 1952. The data also show increases in imports of other farm appliances and water pumps.

The statistics on imports of fertilizer, fungicides and insecticides are included in Table 30.

TABLE 28. IRRIGATION PROJECTS.

Type of irrigation	Number	Irrigable area 1,000 rais	Water capacity 1,000 cu.m.	Irrigated area in 1962 1,000 rais
STATE IRRIGATION PROJECTS				
Northern section		787.9		469.7
Northeastern section		657.7		657.7
Greater Chao Phya (Central Plain)		5,718.0		5,428.0
Other projects in Central Plain		<u>2,939.1</u>		<u>2,725.5</u>
Total		<u>10,102.7</u>		<u>9,230.9</u>
PEOPLE (LOCAL) IRRIGATION PROJECTS				
Northern provinces (8 changwads)		568.8		249.1
Northeastern provinces (4 changwads)		17.5		17.5
Central Plain (14 changwads)		586.7		255.5
Southern provinces (9 changwads)		<u>309.2</u>		<u>296.6</u>
Total		<u>1,482.2</u>		<u>818.7</u>
TANK IRRIGATION PROJECTS				
Northeastern projects	133	321.16	316,578.88	295.16
Northern projects	2	—	2,865.00	—
Central Plain projects	<u>147</u>	<u>351.41</u>	<u>370,803.62</u>	<u>325.41</u>
Total	<u>282</u>	<u>672.57</u>	<u>690,248.50</u>	<u>620.57</u>
RESERVOIR PROJECTS				
Bhumipol Dam (North)		2,500.00**	8,600,000.00	*
Kang Krachan (Central)		<u>207.00**</u>	<u>610,000.00</u>	
Total		<u>2,707.00</u>	<u>9,210,000.00</u>	*
Grand Total		<u>12,257.47</u>	<u>9,900,248.40</u>	<u>10,670.17</u>

* Data not available.

** Irrigated only in dry season.

TABLE 29. IMPORTS OF MACHINERY AND APPLIANCES USED ON FARMS,
1952-1962.

Year	Farm machinery and appliances for preparing and cultivating the soil		Other farm machinery and appliances		Water pumps	
	Sets	1,000 bahts	Sets	1,000 bahts	Number	1,000 bahts
1952	—	—	*	3,761	14,319	13,773
1953	38	4,338	*	2,671	9,464	16,009
1954	277	2,769	*	4,444	11,294	23,027
1955	467	3,296	1,468	1,339	93,258	18,588
1956	*	6,754	*	5,374	10,485	13,865
1957	1,003	4,367	11,806	7,385	20,811	20,006
1958	17,595	5,566	8,040	6,258	13,482	20,124
1959	1,671	10,344	18,362	6,395	9,409	17,632
1960	*	9,580	*	6,942	11,166	15,658
1961	*	12,659	*	6,226	12,059	19,192
1962	*	14,953	*	4,425	11,861	63,232

* Data not available.

TABLE 30. IMPORTS OF FERTILIZER, FUNGICIDES AND INSECTICIDES, 1952-1962.

Year	Fertilizer		Fungicides and insecticides	
	Tons	1,000 bahts	tons	1,000 bahts
1952	2,753	2,951	830	9,072
1953	3,245	3,934	529	4,885
1954	4,925	7,408	1,846	13,063
1955	20,591	28,394	848	14,673
1956	23,370	34,150	1,082	11,558
1957	39,891	61,653	1,435	23,604
1958	29,697	44,848	1,330	24,271
1959	47,765	73,458	1,851	31,101
1960	51,908	70,328	2,450	34,611
1961	54,809	70,884	2,372	36,086
1962	66,467	85,443	3,586	49,698

Methods of increasing agricultural production are reflected in the data shown in Table 30. In 1962, the importation of fertilizer was 24 times greater than that in 1952. Fertilizer was also produced domestically. The use of fungicides and insecticides also increased tremendously from 830 tons in 1952 to 3,586 tons in 1962.

The 4-H club project.

The 4-H club project in Thailand is operated under the jurisdiction of the Division of Agricultural Development and Publications, Department of Agriculture, with the cooperation of other departments of the Ministry of Agriculture, Ministry of Interior, and Ministry of Education. The aims of this project are to promote in youths favorable attitudes and to establish skills appropriate to the agricultural enterprise, as well as to promote an increased standard of living of rural families through experience with appropriate methods and practices most suitable to the particular environments of these youngsters.

Pilot projects for the 4-H program were first begun in 1953. A 4-H club section was established within the Department of Agriculture by Royal Decree in 1954. It is Government policy to promote the development of 4-H clubs both in quantity and quality. Table 31 discloses the expansion of and expenditure for the 4-H club programs from 1961 to 1964.

TABLE 31. GROWTH OF 4-H CLUB PROGRAMS, 1961-1964.

Year	Expansion of the 4-H clubs				Expenditure	
	Number of provinces	Number of chapters	Number of members	Number of advisors	Government appropriation bahts	Additional funds bahts
1961	43	222	8,453	521	299,305	271,600
1962	47	265	9,833	604	490,000	739,000
1963	59	412	14,334	825	510,000	400,000
1964	62	547	19,450	1,058	590,000	400,000

Source: Report of the Division of Agricultural Development and Publications.

Statistics in Table 31 show a very promising trend of progress in the 4-H club project which deals directly with youths. The numbers of this organization, who eventually will become full participants in the agricultural activity of the country, are increasing in number quite rapidly—19,450 in 1964, as compared to 8,453 in 1961. The activities carried out in 1962 are displayed in Table 32.

TABLE 32. ACTIVITIES OF THE 4-H CLUB MEMBERS IN 1962.

Activities	Number of participants	Per cent of total members
Raising poultry	7,450	37.2
Raising swine	3,173	15.9
Raising fish	187	0.9
Raising rabbits	223	1.1
Vegetable gardens	4,922	24.6
Upland crops	1,132	5.7
Fruit orchards	1,149	5.7
Mushroom culture	469	2.3
Decorating plants	586	2.7
Rice farming	346	1.7
Home economics	322	1.7
Others	69	9.3

Source: Report of Division of Agricultural Development and Publication.

According to the data in Table 32, raising poultry is the most popular activity among the 4-H members and raising fish is the least; vegetable gardens are most popular in the line of horticulture, and rice farming, the least. Home Economics can attract only 1.7 per cent of the members. Table 33 displays the targets of the 4-H program for 1965 and 1966.

TABLE 33. TARGETS OF 4-H PROGRAM FOR 1965 AND 1966.

Year	Number of provinces	Number of chapters	Number of members	Number of advisors
1965	71	767	25,984	1,535
1966	71	980	31,374	1,961

Source: Report of Division of Agricultural Development and Publication.

By 1965 the 4-H program will be expanded to every province and the number of chapters will be increased by about three more in every province in 1966. The numbers in 4-H clubs is expected to reach 31,374 in 1966, with 1,961 advisors.

The obstacles to the further development of this program are reported to be lack of personnel and lack of clear understanding among personnel.

The Ministry of Interior.

The Ministry of Interior has extended indirect support to the agricultural sector through its resettlement projects, community development projects, and other services of the border police. These projects have received more emphasis recently.

The Public Welfare Department, Ministry of Interior, began the resettlement projects in 1940 by reserving some uncultivated land for the purpose. In 1963, out of the 4,548,144 rais* of land reserved 990,476 had been distributed among families, of which 806,921 rais were under cultivation by 38,813 families thus benefiting 170,191 person in 40 settlements within 33 provinces. The major occupations of the settlers are horticulture, raising livestock, wood cutting and charcoal burning. The hill tribes are included in four of these settlements. The Government programs for them include distribution of seed and livestock and the opening of schools and health centers. These programs for the hill tribes aim at assisting them in finding new agricultural occupations, thus ending the necessity of their cultivation of the opium poppy, and ending their practice of farming by the shifting cultivation method. The services provided for the hill tribes come mainly from the police.

The community and rural development program was initiated first in the Northeast and in the South. The program emphasis is on providing the community with facilities such as rural roads, wells, irrigation dikes and ditches and with basic knowledge for the betterment of living conditions and of occupation. This information applies to matters of health and home living and to facts about soil and agriculture in general.

The Ministry of Education.

The provisions for improvement of agricultural production made by the Ministry of Education are both direct and indirect. Agricultural education is included in the secondary school curriculum to provide direct information about agricultural topics to the students who select agriculture as their elective. The Teacher Training Department includes agricultural courses in the Rural Teacher Training Program, which produces teachers not only to teach the courses but also to be leaders in agriculture and community development in the communities to which they may be assigned.

Projects for the improvement of agricultural education are planned by the National Economic Development Board as follows:

1. Agricultural School Project. This project covers both agricultural schools in the Public Welfare Department's settlements, and agricultural schools in general. Lower and upper secondary education in the fields of vocational agriculture will be improved and expanded. Courses of instruction will be adapted to suit the local conditions. During 1964-1966 three new advanced up-to-standard agricultural schools will be opened in three different regions of the country. They probably will be located in provinces which are the centers of communication and transportation networks so that the students from neighboring provinces can easily attend the schools. Some existing agricultural schools will be raised to college

* $2\frac{1}{2}$ rais = 1 acre.

status. Chiengmai Agricultural College will be improved both in curriculum and administration. "Modern" agricultural schools offering 5-month courses to owner-operators who are interested in modern cultivating methods will be set up where there are no agricultural schools of either general or "welfare" type.

2. Technical College Project. A new technical school and higher institute of agriculture and engineering are to be set up at Khonkaen. The new institute is expected to be in operation in 1965 with the initial admission of 60 students to each of the two branches. The institution will be expanded and developed into the University of the Northeast.

3. Improvement and expansion of the Faculty of Agriculture of Kasetsart University. The Government has set up a five-year program beginning in 1965 with a view to raising the number of students graduating each year by 100 by 1970. More emphasis will be given to agricultural research.

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5. STUDY ON EDUCATION

INTRODUCTION

If the educational history of Thailand is studied, one can see that Thailand is a nation that attaches great importance to the organization of its educational program to meet the needs of her children. The nation continually has been trying to adjust and improve her educational program to keep up with the ever-changing world since the first National Scheme of Education was set forth in 1895. In all there have been ten revisions of the original scheme, the most recent of which came out in 1960. To give the reader a general picture of the educational system of Thailand, the current National Scheme of Education is presented below.

The National Scheme of Education.

Aims.

1. The Thai people shall be educated according to their individual capacities, so that they should be moral and cultured citizens, with discipline and responsibility; with good health, mental and physical; and with a democratic outlook. They should be given knowledge and ability to carry out an occupation useful to their country and nation.
2. Boys and girls should receive education in school up to the age of fifteen at least.
3. Boys and girls should strive to gain knowledge and experiences that will serve useful purposes in their lives.
4. Education shall be carried out to serve the needs of the individual as well as those of society, in harmony with the economic and political systems of the country. It shall comprise, *inter alia*:
 - a. Moral education—that aspect of education which deals with ethics and refinement, moral responsibility, and with the spirit of service.
 - b. Physical education—that aspect which deals with the promotion of good health, mental and physical, and a sporting spirit.
 - c. Intellectual education—that aspect which deals with the improvement of thinking, and with the acquisition of knowledge, techniques and principles conducive to a useful and happy life.
 - d. Practical education—that aspect which deals with habits of industry and perseverance, and with the training in manual skills that are basic to earning a livelihood.

Levels of education.

5. There are four levels of education:
 - a. Pre-school education.
 - b. Elementary education.

- c. Secondary education.
- d. Higher education.

6. Pre-school education means that level of education which aims to prepare children for elementary education.

7. Elementary education means that level which aims to promote the development of children towards effective learning and desirable behaviour. Elementary education is divided into: the junior school, consisting of 4 grades or forms; and senior school, consisting of 3 grades or forms.

8. Secondary education means that level of education which follows elementary education and which aims to explore and promote the interests and aptitudes of boys and girls. The knowledge and skills acquired should enable them to carry out an occupation or form a foundation for a well-conducted life, or for further education. Secondary education is divided into the lower school and the upper school, each consisting of not more than three grades or forms.

9. Higher education means that level of education which deals with the study of, and research in, the higher academic, professional and technical subjects, at the universities or similar institutions.

The school system.

10. Pre-school education precedes compulsory education. Schools may be set up to teach young children of pre-compulsory age, the teaching may be so arranged that the children can be taught in two or three age groups. Pre-school classes may also be arranged in elementary schools.

11. Elementary education is considered to be the due of all boys and girls. It may be given in schools where there are both the junior and senior grades, or where there are only the junior, or only the senior grades.

12. Secondary education must take into serious consideration individual differences. It is to be organized in two streams: the general stream which aims chiefly at general education, and the vocational stream which aims chiefly to give specific vocational training.

13. In the general stream, secondary education consists of three lower grades or forms, and two upper grades or forms continuous from the lower. At the end of the third grade or form, boys and girls should have acquired knowledge and skills which enable them to earn a living within certain limitations and at the end of the fifth form, they should be able to apply for admittance to institutions of higher learning.

14. In the vocational stream, schools will arrange courses of various lengths, from about one to three years depending on the character of the trade or profession to be taught. Some of the courses may require as a foundation the education and training received in the three lower forms of the general stream, and may be organized as a continuation of that education and training.

15. The relationship between the various levels grades or forms and the standard ages of boys and girls is shown in a chart on page 172.

Compulsory education.

16. Compulsory education means that which boys and girls must receive in school as required by law.

The state should make efforts to extend the period of compulsory education in accordance with its economic strength so that the standard of education of the people may be raised.

17. Compulsory education that is given in schools belonging to state must be free. The state should provide educational equipment and materials to an appropriate extent.

18. The state should provide a certain appropriate amount of education to boys and girls who are exempted from compulsory education.

General policies.

19. Education is to be recognized as among the prime functions of the state, and must receive the support and stimulation due to it.

20. The educational system of the nation must be organized by the state and all educational institutions must be under its supervision.

21. The state should allow institutions of higher education the freedom to operate within the framework of relevant legislations.

22. The state is responsible for the training of teachers, and should produce those with qualifications befitting their tasks so that the aims of education as stated in this document may be fulfilled. Special emphasis should be given to this activity.

23. In carrying out the work of education the state shares its labor with private organizations or persons, at those levels not defined as higher education.

24. The state supports private education in accordance with established regulations.

25. The state supports vocational education as extensively as possible within its financial capacity in accordance with the economic conditions and needs of the nation.

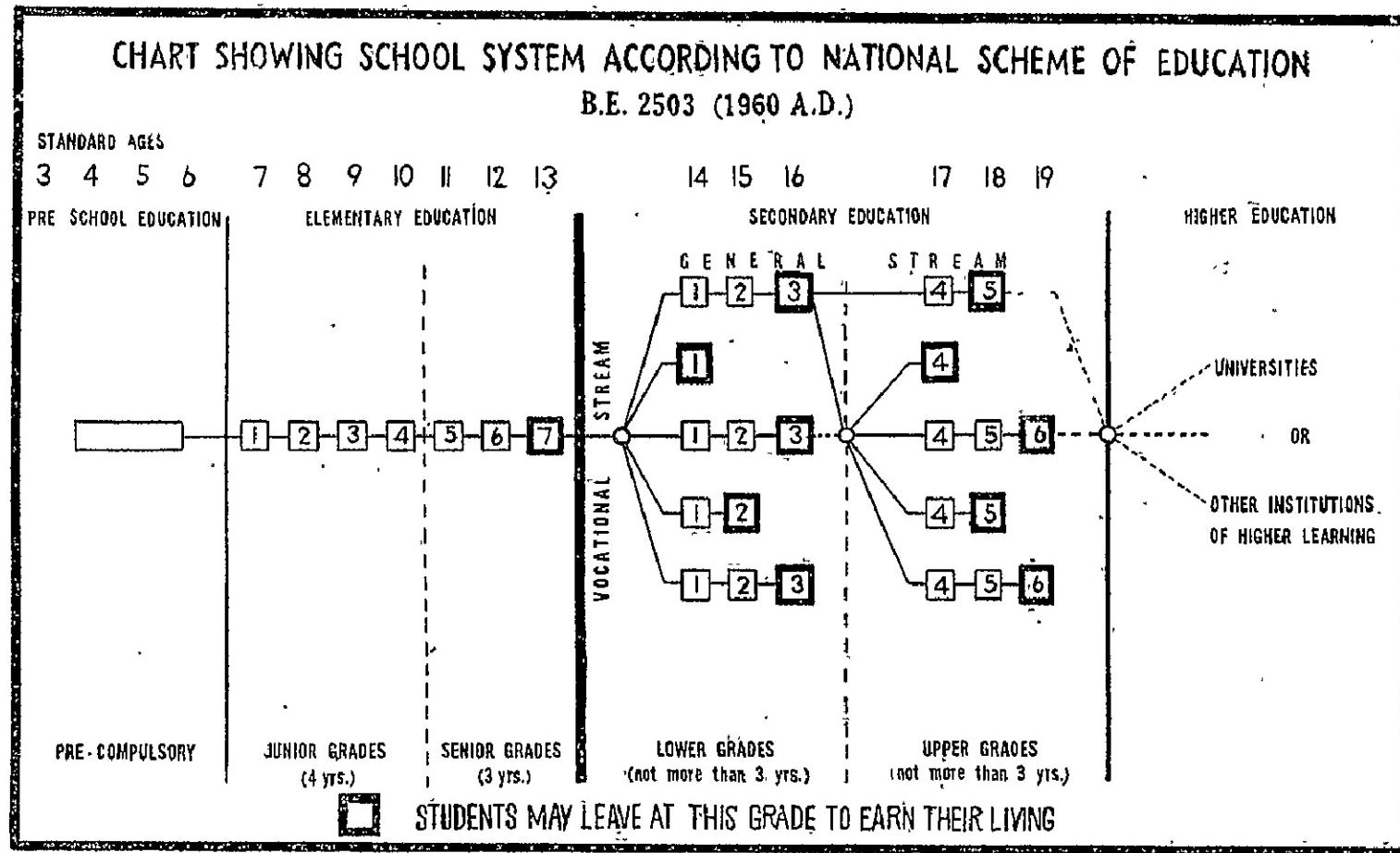
26. The state supports adult education to serve the needs of those persons who have missed the opportunities during the period usually devoted to school education, and those whose conditions do not enable them to receive education in the usual manner, and also for the purpose of improving vocational efficiency.

27. The state promotes study and research in all fields of science and art.

28. The state gives scholarships and fellowships to students and scholars in accordance with established regulations so that the potentialities of certain individuals may be developed.

29. All institutions of education should employ personnel qualified to work in their professional fields and at the particular levels of education.

30. The state has the power and the duty to control, advise, and inspect institutions of education according to established regulations.



Number of schools, classrooms, teachers, and pupils.

The figures representing the number of schools, classrooms, teachers and pupils may also help in giving a clear general picture of the way the present educational scheme is structured. In 1962 there were 28 thousand schools in the country, with 4.6 million pupils under the age of 19—about 16 per cent of the total population. There is an average of 33 pupils per teacher. About 91 per cent of the pupils are attending elementary schools, six per cent are in secondary schools, one per cent in vocational schools, 0.4 per cent in teacher training schools, 0.9 per cent in universities and 0.7 per cent in other vocational schools set up by private organizations (see Tables 1 and 2 for more details).

TABLE 1. NUMBER OF SCHOOLS, CLASSROOMS, TEACHERS, AND PUPILS, 1962.

Type of School	Number of Schools	Number of Classes	Number of Teachers	Numer of Pupils
Total	28,416	149,966	140,298	4,587,450
Kindergarten	59	451	495	11,078
Local and Municipal	23,243	112,313	88,130	3,431,246
Elementary (upper level)	1,486	5,275	5,596	155,580
Secondary	409	4,575	7,731	168,816
Teachers' training	33	565	1,727	22,278
Vocational	199	1,817	4,818	46,675
Physical Education	2	12	65	458
Special Education	13	145	199	3,763
Private	2,970	24,785 ¹	31,463	746,495 ²
Dramatic Arts	1	22	49	900
Arts and Crafts	1	6	25	161

- N.B. 1. This figure includes 1,161 classrooms of other educational institutions not coming under the Ministry's direct supervision.
 2. This figure includes 10,463 pupils in other educational institutions not coming under the Ministry's direct supervision.

Source: Department of Educational Techniques, *Educational Statistics*, Preliminary, 1962.

Educational pyramid.

The Statistics in Tables 1 and 2 may be represented by a pyramid as shown in Figure 1, with an unproportionate big base comprised of elementary children.

TABLE 2. NUMBER OF PUPILS AT ELEMENTARY LEVELS IN BOTH GOVERNMENT AND PRIVATE SCHOOLS, ARRANGED ACCORDING TO GRADE-LEVELS (000'S).

Levels of Education	Cumulative Years of Schooling	Government Schools					Private Schools	Total
		Elementary	Secondary	Vocational	Teacher*	Total		
Elementary	1	1,133.0				1,133.0	147.8	1,280.9
	2	855.7				855.7	72.3	928.0
	3	702.6				702.6	64.1	766.7
	4	588.1				588.1	54.7	642.8
	5	69.8				69.8	66.0	135.8
	6	61.3				61.3	59.8	121.1
	7	56.0				56.0	54.6	110.6
Secondary	8		46.5	2.8		49.3	46.3	95.6
	9		41.4	4.0		45.4	40.9	86.3
	10		33.3	5.6		38.9	37.7	76.6
	11		8.9	12.3	5.9	27.1	14.5	41.6
	12		5.3	9.8	5.8	20.9	8.1	29.0
	13			8.5	2.3	10.8		10.8
	14			2.3	2.3	4.6		4.6
	15			1.9	0.8	2.7		2.7
	16			0.7	0.5	1.2		1.2

* Includes the students in the Vocational Teacher Training Schools.

Sources: 1. Department of Educational Techniques, Ministry of Education, *Educational Statistics*, 1962.
2. Bureau of the Budget.

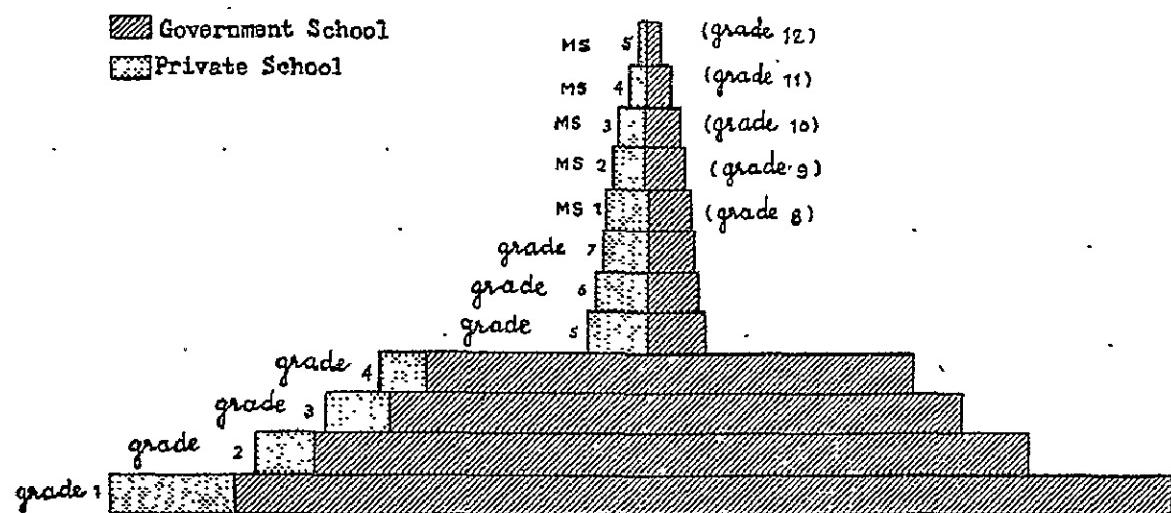


Figure 1. Enrollments in Private and Government Schools, 1962.

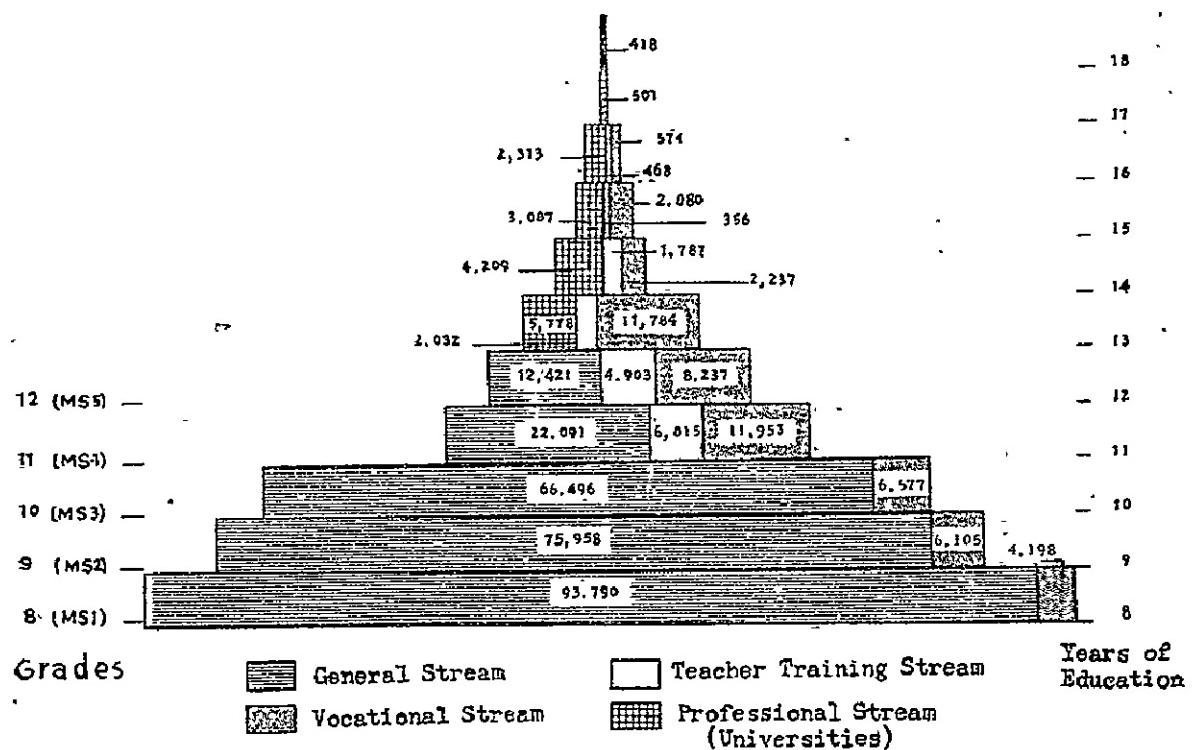


Figure 2. Enrollments in Secondary and Higher Education by Type of Schools.

The educational expenditure in the national budget.

The allocation for educational expenditure is, so to speak, a form of investment. In 1961, Thailand set aside for educational expenditure about 2.9% of her gross national product. Table 3 shows the educational allocation of Thailand compared to that of other countries.

TABLE 3. THE BUDGET ALLOCATIONS OF FOUR COUNTRIES FOR VARIOUS PURPOSES, RECKONED AS PERCENTAGES OF G.N.P. 1961.

Average annual Income per person	Total Governmental Expenditure	To Economic Development	To Social Development			Total
			Educa-tion	Public Health	Others	
Less than \$ 100: India	15.8	6.3	1.4	0.6	0.3	2.3
Less than \$ 200: Thailand	16.8	3.5	2.9	0.5	0.9	4.3
Less than \$ 500: Japan	21.1	9.2	1.5	0.5	4.3	6.3
More than \$ 500:						
Great Britain	31.4	5.1	4.1	3.2	7.8	15.1
U.S.A.	41.9	4.2	3.8	1.1	4.5	9.4

Source. United Nations, *Report on the World Social Situation*, No. 61, IV, 4, 1961, p. 71.

It may be seen from the above comparison that in 1961 Thailand invested about one-sixth of the total governmental expenditure in her educational program, compared with the one-eighth which the British government spent on hers. This shows what great emphasis Thailand has put on her educational scheme. However, during the past five years, beginning in 1958, the national budget of Thailand has allowed from about 2.56% to 3.33% of the G.N.P. for the educational program, which still is a small amount compared to the 4% to 6% set aside for the same purpose by well-developed countries. If, therefore, Thailand wishes to develop her educational program in order to bring about improvement of the general condition of the people, she will have to raise her educational allowance at least by 2% or 3% of the G.N.P.

A study of the allocation of funds for various levels of education in well-developed countries yields the following data: in Europe the ratio of amounts spent on elementary, secondary, and higher education was 70 : 20 : 10; in the United States and the Union of Soviet Socialist Republics the ratio was 60 : 25 : 15; and in Japan, 65 : 20 : 15¹. From these figures it can be concluded that in well-developed countries the major proportion of the educational budget goes to elementary education. In Thailand the allocation of funds between 1959 and 1963 for elementary, secondary and higher education was in the ratio 71 : 17 : 12. These figures approximate those of Europe.

But the National Economic Development Plan for 1964-1966 indicates a ratio of 46:8:46. Thus the budget for education during this three-year plan is concentrated on the improvement of higher education.

Statement of the problems and the purpose of this study.

The main purpose of this study is to investigate the educational needs of Thai children in terms of their demand for education. It is hoped that the results of this study may be used as a measure of the educational needs of Thai children and that these results can at least be taken into consideration as a criterion for an educational development program to meet the needs of all Thai children and Thai people as much as possible.

The general outline of the study is based on the several levels and divisions of the educational system.

1. Problems and needs of Thai children in pre-compulsory education.
2. Problems and needs of Thai children in elementary education.
3. Problems and needs of Thai youth in secondary education.
4. Problems and needs of Thai youth in vocational education.
5. Problems and needs of Thai children and youth with respect to teachers education.

¹Attakor, Boonchana, "Economics of Education," *Educational Planning and Manpower Development*, Bureau of Educational Planning, Ministry of Education, 1963.

Methods and limitations of the study.

The data of this study have been collected and assembled from various sources by the following procedures:

1. Reviewing and gathering information from documents and available relevant literature.
2. Interviewing and consulting the personnel or authorities in governmental and private organizations involved.

This report is limited to studying the educational needs of Thai children only from the age of pre-compulsory education to the age of 19.

PRE-COMPULSORY EDUCATION.

As practised in Thailand, there are two types of pre-elementary education: the kindergarten type with pupils as young as $3\frac{1}{2}$ years of age; and the pre-elementary school type, admitting pupils from six years of age, this part operating as an adjunct to the elementary education program, using common facilities.

In 1957 the number of children in kindergarten schools was 17,205 and in 1961 the number had grown to 28,805. In the last four years there has been an increase of 11,600 pupils. By 1963 children at the kindergarten level totaled 40,995. Thus it is evident that kindergarten enrollment has increased more rapidly in the last couple of years than previously.

A comparison between the number of kindergarten pupils in private and government-run schools in 1963 shows that out of 40,995 pupils, 83% were in private kindergarten schools.

In the pre-elementary schools there was an increase of from 7,179 to 18,904 pupils in the period 1954-1959. Between 1960 and 1963 the enrollment decreased from 16,662 down to 15,553.

The total number of pupils in kindergarten and pre-elementary schools all over the country in 1963 was 56,548, about 1.2% of the total number of pupils in schools. From this information, it may be seen that the pre-compulsory level of education is the concern of only a small minority. It is evident also that government prefers to leave the support of pre-compulsory level school facilities to private resources, since it desires to concentrate on the development of educational facilities for the compulsory education age group. Kindergarten and pre-elementary schools are found mostly in the capital city, a fact which shows that this kind of education is not available for the majority of Thai children. Such being the case, the problems and needs of the children at the pre-compulsory level are not dealt with in great detail in this paper.

PROBLEMS AND NEEDS OF CHILDREN AT THE ELEMENTARY SCHOOL LEVEL

Compulsory education.

In Thailand the term "compulsory education" can be applied only to the elementary levels of education. This, in general practice, means grade 1 through 4. However, the Government is now working for the extension of compulsory education through grade 7. In 1962, the total number of pupils in the whole country was about 4.59 million (16.38 per cent of the total population). Of this total, 3,985,900 were in the elementary schools.

The figures of the Department of Educational Techniques, the Ministry of Education, show that during the past twenty years the increase in the number of pupils enrolled in grades 1-4 was 4% per year. One reason for this increase is that parents are realizing more and more the desirability of having their children go to school. This is coupled with two more facts that parents are more strongly encouraged than ever by the Ministry to send their children to school, and that the child population to complete elementary education is steadily increasing. Although the law requires all children to complete grade 4 or to attend school from the age of 7 until 15, yet a great number still evade the requirement. Of the children reported as being eligible for initial school enrollment in 1954, only 96% entered the first grade of school; and in 1963, 99% of the reported child population

TABLE 4. NUMBER OF CHILDREN AT THE COMPULSORY LEVEL OF EDUCATION, 1954-1963.

year	Number of children reported			Number enrolled			Percentage of Children Enrolled from among those reported
	Total	Male	Female	Total	Male	Female	
1954	2,637,121	1,382,009	1,255,112	2,545,408	1,335,642	1,209,766	96.52
1955	2,799,846	1,467,872	1,341,974	2,678,159	1,396,161	1,281,998	95.66
1956	3,239,177	1,680,555	1,558,622	3,036,719	1,580,952	1,455,767	93.75
1957	3,142,492	1,640,285	1,502,207	3,051,411	1,591,300	1,460,111	97.10
1958	3,349,484	1,702,526	1,606,958	3,019,728	1,620,199	1,471,529	92.30
1959	3,333,839	1,721,453	1,612,386	3,199,328	1,657,806	1,541,522	95.96
1960	3,287,380	1,707,360	1,580,020	3,179,046	1,652,826	1,526,220	96.70
1961	3,784,689	1,959,209	1,825,480	3,632,347	1,881,960	1,750,387	95.97
1962	3,579,748	1,852,941	1,726,807	3,480,381	1,801,843	1,678,538	97.72
1963	3,631,090	1,891,272	1,739,818	3,608,410	1,877,369	1,731,041	99.37

Source: Department of Educational Techniques, Ministry of Education. *Educational Statistics, 1954-1960, 1961, 1962, 1963.*

entered school. These percentages do not take into account the degree of attendance (absenteeism). Table 4 shows the figures from the child population census and the number entering schools throughout the country.

The following figures show the average annual increase of the number of elementary pupils:

1942-1945	average increase of	29,000 pupils
1946-1950	average increase of	39,000 pupils
1951-1955	average increase of	79,000 pupils
1956-1960	average increase of	125,000 pupils
1961 alone	increase of	152,000 pupils ³

The rate of increase reflected in the figures above means a greater demand for more schools, more teachers and more teaching materials.

Educational officials reported that in 1959 about 40% of the total number of the first grade classrooms had at least 40 pupils per classroom; 21.2%, 50 pupils; 11.2%, 60 pupils; and .85% over 90 pupils. In the year 1960, the survey revealed that:

- 47.2% of the first grade classrooms have 40 pupils per classroom,
- 23.8% of the first grade classrooms have 50 pupils per classroom,
- 13.9% of the first grade classrooms have 60 pupils per classroom,
- and 2.3% of the first grade classrooms have 90 pupils per classroom.³

This increased crowding of the classrooms may be considered damaging to the quality of teaching, especially in the eyes of those who believe that the quality of teaching will suffer if the number of pupils in a classroom exceeds 25. Naturally, the teacher will not be able to give individual attention to each one and the learning process of the children will suffer.

The average number of grade 1 pupils per classroom over the whole country according to the UNESCO report increases from 39 in 1959, to 41 in 1960, to 44 in 1961.⁴ Thus the figures show that the number of first grade pupils per classroom has increased each year. This may be because the number of pupils entering school each year has increased, because a great number fail to pass on into the second grade, or because there are no additional classrooms to cope with the increasing number of pupils—or even all the three reason together. This is one of the needs of children which calls for immediate action.

The compulsory education program of Thailand is by far better than that of many neighbouring countries if the percentage of elementary pupils to total population is compared among the several countries. Table 5 shows the results of a survey in 1951-1955 mentioned by UNESCO in a book called "World Survey of Education."

³ The Joint Thai-Usom Human Resources Study, "Preliminary Assessment of Education and Human Resources in Thailand" School Enrollment, part II, 1961, p. 6.

⁴ UNESCO, "Educational Investment Programming Mission," Thailand. September, 1963, p. 35.

⁴ *Ibid.* p. 35.

TABLE 5. PERCENTAGE OF POPULATION COMPRISED BY ELEMENTARY SCHOOL PUPILS IN VARIOUS COUNTRIES.

Country	Percent of Total Population
Burma	6
Cambodia	6
Federation of Malaya	12
India	6
Indonesia	8
Japan	14
Republic of China	13
Thailand	13
Vietnam	4

TABLE 6. ENROLLMENT IN PRIMARY SCHOOL IN FOURTEEN ASIAN COUNTRIES.

Country (Year)	Total Number of School age Children	Compul- sory age group	Enrollment			Proportion of enrollment to total
			Boys	Girls	Total	
Afghanistan (1958 - 59)	1,200,000	6—12	129,073	12,246	141,319	11.8
Burma (1959)	2,500,000	6—11	786,010	680,321	1,466,331	59.9
Cambodia (1959)	901,000	6—12	386,736	150,026	536,763	59.6
Ceylon (1958)	1,706,000	5—11	888,753	756,681	1,645,435	96.4
India (1956 - 57)	50,000,000	6—11	17,884,117	8,080,691	25,964,808	51.9
Indonesia (1958 - 59)	14,000,000	8—14	4,201,254	3,058,245	7,259,499	51.9
Iran (1958 - 59)	3,000,000	6—12	761,372	373,847	1,135,219	37.8
Laos (1959)	400,000	6—14	71,064	27,998	99,062	24.8
Malaya (1959)	1,296,389	6—13	632,971	474,316	1,107,287	85.4
Nepal (1959)	1,140,000	6—11	90,000	20,000	110,000	9.7
Pakistan (1957-58)	10,519,000	6—11	3,232,355	994,142	4,226,497	43.7
Philippines (1957 - 58)	4,370,200	7—13	1,950,920	1,784,737	3,735,657	85.5
Thailand (1959)	3,333,839	7—14	1,657,806	1,541,522	3,199,328	95.96
Viet Nam (1958-59)	2,040,500	6—11	700,905	437,018	1,137,923	55.8

Source: Dottrens, Robert., *The Primary School Curriculum*, Monographs on Education, UNESCO. 1962, p. 49

If the percentage of children subject to compulsory education who actually are enrolled as elementary school pupil in Thailand is compared with this figure of other countries, it can be seen that Thailand manages to educate almost all her children at the elementary level and is better off in this respect than some other countries. Table 6 shows the number of elementary pupils in relation to the total number of children at the age of compulsory education in 14 countries.

Children who are exempted by the compulsory education law.

One problem which is bound up with those of health, economics and social welfare is that of school attendance of the children. Each year a great number are unable to attend school because of serious physical handicaps, diseases and socio-economic conditions. In 1962, 31,523 children were exempted from school by the compulsory education laws for the various reasons listed in Table 7.

TABLE 7. NUMBER OF CHILDREN OF COMPULSORY EDUCATION AGE EXEMPTED FROM SCHOOL, BY CAUSE, 1962.

Cause	Number of Children		
	Total	Male	Female
Total	31,523	16,168	15,355
Physically handicapped	1,789	962	827
Mentally handicapped	976	499	477
Chronic disease	477	253	224
Infectious disease	513	424	271
Living over 2,000 metres from school	26,532	13,841	12,691
Earning a living for disabled parents	276	111	165
Living conditions unsuitable for attendance in elementary school	960	260	700

Source: Department of Education Techniques, Ministry of Education, *Educational Statistics*, 1962, p. 9.

It is clear from the information provided in Table 7 that not only are health, physical and social problems obstacles to the education of children at the compulsory age level, but transportation is also. As a result, as many as 26,532 pupils are allowed to stay away from school, all because the distance from school is too great for them to go. The number of

these children may accumulate with time. If, therefore, every Thai child is to be educated, the roads and other means of transportation must be improved.

The condition of elementary school buildings.

Some schools have beautiful modern buildings, ideal for a school, while others—especially in remote areas—are in a state of complete disrepair, unfit for a school. In some relatively inaccessible places where assistance from the Ministry of Education cannot reach, the border police have helped by building schools for the communities, supplying teaching materials by air transportation and even teaching in these schools themselves before handing the entire project over to the Ministry. By 1961 forty-one such schools had been transferred to the Ministry.

Those schools in the remote areas are really in a pitiful state. Most schools have thatch roofs which leak. In many places pupils sit on an earth floor during class. Often schools are found without walls of any description. Pupils are too poor to afford school equipment such as exercise books and pens and pencils. They use a board painted black, or a slate instead of paper to write on. They erase everything they write and nothing can be kept for records. Some students never have school books to read. They simply write down on their boards what the teacher dictates, which is erased almost immediately afterward. Such conditions are by no means unusual in the provinces of Thailand.

From the survey made by the Department of Elementary Education, the condition of the elementary school buildings may be classified as follows:

	Number	Percentage of all schools
Well-built schools made to last about 20 years	10,913	45%
Fairly well-built school made to last about 10 years	3,185	13%
Roughly-built schools made to last 5 years or less	3,665	16%
The make-do type schools unfit in all respects to be called schools, made to last only 6 months or one year	6,252	26%

About 20 per cent of the total number of schools still lack necessary equipment such as desks, chairs and blackboards—equipment which is unthinkable for any school not to possess.

Qualifications of teachers in the elementary schools.

The qualifications of teachers in the elementary schools, according to the 1961 survey of the Department of Elementary Education, are as shown in Table 8.

TABLE 8. ELEMENTARY SCHOOL TEACHERS' QUALIFICATIONS, 1961.

Qualifications	Number	Percentage
Teaching Certificates		
Degree	353	0.41
Secondary Teaching Cert.	2,044	2.39
Elementary Teaching Cert.	17,217	20.16
Pre-primary Teaching Cert.	26,198	30.71
Lower Teaching Cert.	4,249	4.98
Sub-Total	50,061	58.65
Other Certificates	6,838	8.01
No Certificates		
Grade 10-12	6,047	7.08
Grade 7-9	10,101	11.83
Grade 5-6	6,659	7.80
Grade 1-4	5,683	6.60
Sub-Total	35,328	41.32
Total	85,389	100

According to the above table, although almost 59 per cent of elementary teachers possess a teaching certification of some sort, 41 per cent possess none. A closer examination of the table reveals that among the certificate-holders quite a larger number do not have the appropriate qualification at the elementary level, as this level of teaching requires some knowledge of educational and child psychology on the teachers' part. A study of the regulations of the teacher training institutions shows that a minimum of a certificate of Elementary School Teaching or a Certificate of Education, or their equivalents, will qualify a person for such a teaching job. This brings the number of qualified elementary teachers down to only 23% of the total. The other 77%, then, ought to receive in-service training. This 77% includes, of course, the 41% who are in urgent need of in-service training, being entirely without teaching qualifications—having themselves been educated not beyond the elementary or secondary school level.

The information above amounts to a general survey of the qualifications of teachers at the elementary school level. If we go deeper into the matter, i. e., if we examine the qualifications of the teachers at a specific grade level, we shall find a greater degree of inadequacy. For example, according to the UNESCO survey of 1963, sixty-four per cent of first grade teachers are without any teaching qualification. The majority of the unqualified teachers are concentrated in the first few grades of the elementary level, for which they are particularly unsuited considering the great significance this early stage of learning has for the child. Therefore, it is not surprising to find so great a number of first and second grade pupils failing and having to repeat another year.

The wastage in educational investment.

From the economic point of view, cases of pupils failing in examinations or repeating another year or leaving school without completing their minimum requirements indicate a loss in educational investment. Educational research conducted by Mr. Bhunthin Attagara⁵ in 1957 reveals that 413,083 grade 1 pupils failed in their examinations, which is more than one-third (35.41%) of the entire first grade population. If for each three pupils entering the first grade only two pass, the loss is considerable. It is estimated that the Government's educational expenditure per child amounted to about 270.3 bahts in 1957; thus 111,656,335 bahts were expended on behalf of those 413,083 pupils who failed. Such a waste of the nation's already scanty funds cannot be tolerated any longer, some urgent steps must be taken to remedy it, especially since the rate of failure remained in 1962 (32%) nearly as high as in 1957 (35%).

If the number of failures of Thai pupils at each grade level is compared with those of pupils in the Philippines, it is apparent that the Thai figures are higher than those of the Philippines.

TABLE 9 PERCENTAGES OF ELEMENTARY SCHOOL FAILURES BY GRADE LEVEL, IN THE PHILIPPINES AND THAILAND.

Country — Year	Grade 1	Grade 2	Grade 3	Grade 4	Average of all grades
Thailand	35	14	8	9	17
	29	17	13	4	16
Philippines ⁶	12	6	5	5	7
	9	5	7	2	6

The above table shows that the failure rate of Thai pupils is still much higher than that of the Philippines. In the five years from 1957 to 1961 the average failure rate of pupils from grades 1-4 fell only by 1%. In 1957 the Thai failure rate was 2.4 times that of the Philippines and in 1961, 2.7 times it.

Although it is natural, when maintaining an educational standard, for some pupils to fail, nonetheless an analysis of the causes of failure should be made and remedial measures carried out.

⁵ Attagara, Bhunthin. *The Building up of the Leader of Youth in the National Security*, 1961, p. 20.

⁶ Paeratakul, Chawal, "A Comparative Study of School in the Primary Education of Malaya, Philippines and Thailand," 1962, p. 28.

The problem of pupils dropping out of school before completing the minimum educational requirement.

From surveys made by Dr. Chawal Paeratakul⁷ in 1957 and 1961, it has been ascertained that a great number of pupils dropped out of school prior to completing the minimum required period. This represents quite a serious problem to several other countries as well as to Thailand. Table 10 shows the percentage of pupils leaving school prematurely.

TABLE 10. THE PERCENTAGES OF ELEMENTARY SCHOOL DROP-OUTS IN MALAYA, THE PHILIPPINES, AND THAILAND.⁸

Country	Year	Grade 1	Grade 2	Grade 3	Grade 4	Average of all grades
Malaya	1957	10	11	9	10	10
	1961	5	6	5	5	5
Philippines	1957	9	4	7	6	7
	1961	7	4	9	6	7
Thailand	1957	6	5	7	4	6
	1961	5	6	5	4	5

$$\% \text{ of drop-outs} = 100 \times \frac{\text{Number of pupils who left school} + \text{The ones admitted during the year} + \text{The ones who left during the year}}{\text{Number of pupils at the beginning of school year}}$$

From the above table it can be seen that the number of pupils dropping out of elementary school in Thailand in 1957 was between four and seven per cent, while in 1961 it was between four and six per cent. This shows that within five years the percentage of drop-outs decreased by only one per cent. The comparison also shows that the rate of drop-outs in three countries is much the same.

Causes of failure in examinations.

In 1961 the Department of Elementary Education reported that the most frequent cause of failure in all elementary grades is irregular school attendance, which accounts for 31.95% of all failures. Next in order is illness, amounting to 21.22%; and third is mental handicap, amounting to 20.38%.

⁷ *Ibid.*, p. 28.

⁸ *Ibid.*, p. 26.

TABLE 11. NUMBER OF ELEMENTARY SCHOOL FAILURES, BY CAUSES, 1961.

Causes	Number	Percentage
Irregular attendance	206,835	31.95
Illness	137,371	21.22
Mental handicap	131,925	20.38
Language difficulties	118,113	18.24
Emotional and Social handicap	49,763	7.68
Other factors	3,285	0.50
Total	647,292	

Source: Ministry of Education, *Department of Elementary Education, Annual Report, 1961.*

The number of pupils who have failed because of irregular school attendance presents a real problem. It indicates a waste of government funds and a loss in terms of underdeveloped human resources. The reasons for the pupils' absence from school are numerous. For example the parents may not realize the necessity for their children to be educated; or the means of transportation may be lacking; or the school atmosphere may not be congenial enough to attract the children.

The above table shows that other factors may also contribute to such failure, such as the children's own poor health or, in some rural areas, a language barrier. If poor health retards the progress at school of as many as 21% of the children, and the language barrier affects another 18%, then something must be done soon to improve the situation.

Probability of pupils remaining in school.

A study which focuses attention on the size of groups of pupils as they advance through the grade levels will show the amount of pupils lost along the way. We shall now consider two groups of students, one group consisting of pupils entering grade 1 in 1954, and reaching grade 7 in 1960, and the other group consisting of those entering grade 1 in 1957 and reaching grade 7 in 1963. Table 12 indicates the yearly losses of these groups.

Table 12 is intended to show many of the grade 1 pupils actually reach grade 7 in the end. The reason for choosing the 1954 group and the 1957 group is that both are of almost equal numbers, which thus permits easy comparison of the two groups studied. The causes of not advancing to the next grade level may be having to repeat another year, illness, prolonged absence which disqualifies them to sit at the examinations, extreme poverty which forces them to stay at home to work, and death.

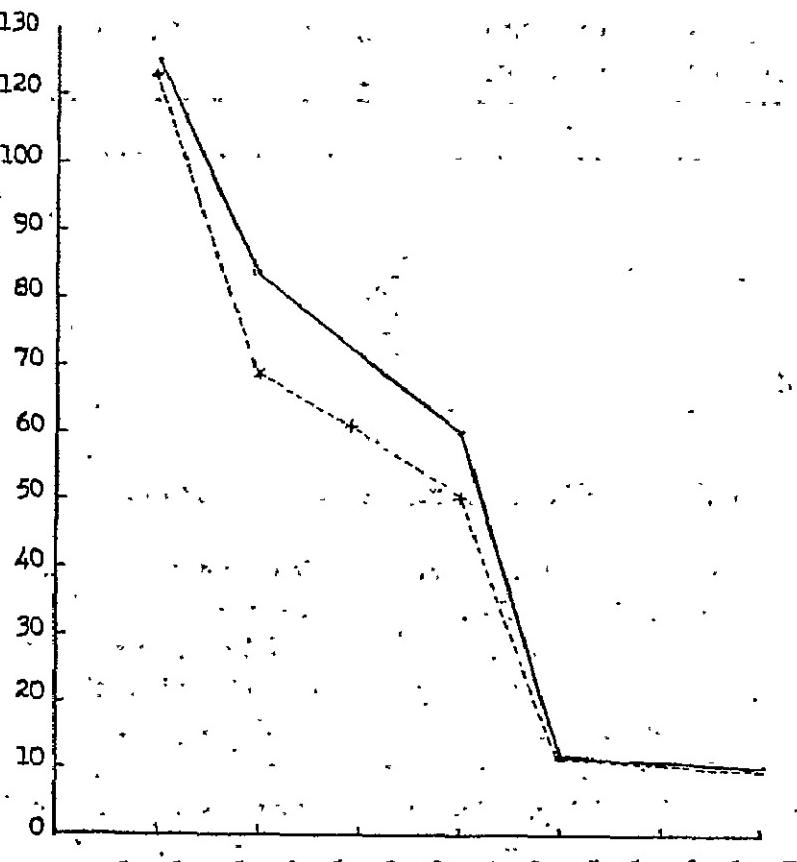
The figures in the table 12 may be better represented in graph form as below. By comparing the two lines one can see that in the more recent group a somewhat higher percentage of pupils stayed on each year up to grade 4 but from grade 5 to grade 7 the

TABLE 12. THE RATE OF ATTRITION OF ELEMENTARY SCHOOL CHILDREN FROM FIRST GRADE TO SEVENTH GRADE.

First Group				Second Group			
School Year	Grade	Number	Percentage	School Year	Grade	Number	Percentage
1954	1	1,233,704	100.00	1957	1	1,247,350	100.00
1955	2	685,174	55.54	1958	2	837,604	67.15
1956	3	606,048	49.13	1959	3	714,267	57.26
1957	4	508,731	41.24	1960	4	605,228	48.52
1958	5	125,460	10.17	1961	5	137,054	10.99
1959	6	115,612	9.37	1962	6	122,763	9.84
1960	7	107,054	8.68	1963	7	106,915	8.57

No. of Students

in thousands



— Number of students who entered the first grade in 1957
---- Number of students who entered the first grade in 1954

Figure 3. School Enrollment Figures for Two Samples of Pupils, Grades 1 to 7.

lines almost touch each other, which means that more or less the same percentage for both groups stay right up to grade 7. Therefore, it appears that more pupils are moving up to the next grade for the first four grades but the percentage of pupils staying in for the latter three grades shows no improvement. It may be said by way of conclusion that out of 100 first grade pupils only eight or nine eventually reach grade 7, which is alarmingly low.

Children who do not enroll in elementary school.

The number of children of compulsory age who are not attending school is continually increasing. These are the children who for various reasons fail to present themselves at the time the survey is being made, or who may have presented themselves for the survey but fail later to arrive at school. These children may have little or no chance at all to be educated later. Economically, they count as a loss of manpower and of human resources of the nation. Table 13 shows the increase in the number of children under survey who failed to enter school.

TABLE 13. NUMBER OF REPORTED CHILDREN WHO DID NOT ENROLL IN THE FIRST GRADE, 1956-1961.

Year	Number	Percentage
1956	23,751	3.62
1957	35,934	5.30
1958	19,498	2.82
1959	27,158	3.77
1960	41,197	5.47
1961	36,142	4.51

The effect on children of the migration of population.

The results of the survey by Dr. Chawal make it clear that the main cause of children leaving school prematurely is migration. This is because in the five years from 1956-61 as many as 81% of those who dropped out of school did so in connection with moving to some other place. The movement of population not only adds to the educational problem, but also affects the social and economic conditions of the country.

From past experience it has been found that population migration has upset social, educational and economic stability. Both the resulting loss of population in one place and the resulting addition to another can create numerous problems. If the people move to an already crowded area, the place becomes overcrowded, the demand for consumers' goods increases, and prices consequently rise. There is a shortage of housing, and wages go down because the supply of labour suddenly increases. There may also be unemployment

accompanied by thefts, prostitution and other illegal activities, all of which, are a menace to the economy and stability of the country.

Problems concerning adult education.

From a study of the recruits in military service, it was found that in some section of the Royal Navy four per cent of the listed personnel were illiterate. It can be assumed that these people were once able to read and write since most of them have completed the 4-year compulsory education requirement. The prevailing conditions in the rural regions of Thailand are such that a man may revert to a state of illiteracy through the course of several years after having completed a four-year period of schooling. The reason for this may be because what children learn from school is not sufficient to make a lasting impression on them, as well as because of lack of opportunities, or of the necessity, to utilize such skill frequently. The latter factor is attributable in part to the fact that media for mass communication are not in widespread enough use by the public. Therefore, a move should be made toward using them to promote adult education.

The elementary school curriculum.

Originally the elementary school curriculum was applicable for a compulsory enrollment period of four years. But the period has now been extended to seven years. During this elementary school period the goal is to educate the children according to four main objectives: (1) self-realization; (2) human relations; (3) economic efficiency; and (4) civic responsibilities. These objectives are specified with the intent that children be assisted to grow up to be good citizens of a democratic society.

TABLE 14. TIME ALLOTMENT PER WEEK TO VARIOUS SUBJECTS IN THE ELEMENTARY SCHOOL CURRICULUM, 1960.

Subject	Hours per week	
	Lower Elementary (Grades 1-4)	Upper Elementary (Grades 5-7)
Thai	7	4
Social studies	6	4
Elementary Science	3	3
Mathematics	3	4
Health and Physical Education	3	2
Arts and Music	3	2
English	-	3-5
Practical subjects	-	8 or 6
Total	25	30

Source: Ministry of Education, *Elementary School Curriculum, 1960*.

Elementary school children are required to go to school no less than five days per week, to have not less than 25 hours of class per week, and to attend not less than 35 week per year. The school hours are divided up among the various subjects as shown in Table 14.

Comparision of Tables 14 and 15 reveals that the number of hours devoted to social studies was higher in 1960 than in 1948—the 1948 curriculum allowed only four hours for social studies subjects whereas in 1960 six hours were allowed. This serves as an example of the tendency for the curriculum to promote a sense of democracy in the pupils by setting a wide scope for social studies.

TABLE 15. TIME ALLOTMENT PER WEEK TO VARIOUS SUBJECTS IN THE ELEMENTARY SCHOOL CURRICULUM, 1948.

Subject	Hours per week			
	Grade 1	Grade 2	Grade 3	Grade 4
Morals	1	1	1	1
Civics	1	1	1	1
Thai	11	11	9	9
Arithmetic	3	3	4	4
Geography and History	2	2	2	2
Nature Study	2	2	3	3
Hygiene	1	1	1	1
Drawing	1	1	1	1
Music, Manual work and Practical Subjects	3	3	3	3
Physical Education and Scouting	3	3	3	3
Total	28	28	28	28

Source: Ministry of Education, *The Elementary School Curriculum*, 1948.

TABLE 16. COMPARISON OF TIME ALLOTMENT PER WEEK FOR VARIOUS SUBJECTS IN ELEMENTARY SCHOOL CURRICULUM IN SEVERAL ASIAN COUNTRIES.

Subject	Hours per week			
	* India	* Vietnam	* Thailand	Average hours per week in 18 countries
Arithmetic	4 $\frac{1}{2}$	3	3	3.6
Science	6	2 $\frac{1}{2}$	3	—
National Language	4 $\frac{1}{2}$	8	7	11.2
Arts and Music	4 $\frac{1}{2}$	3 - 4	3	—
Manual work	12	1	8 - 6	—

* Dottrens, Robert, *The Primary School Curriculum*, Monograph on Education, II, UNESCO, 1962, p. 98.

The elementary school curriculum of Thailand compared with that of other countries.

Reference to Table 14 and 15 shows a decrease in teaching periods for some subjects, and an increase for others. Table 16 provides a comparison of the teaching time devoted to some subjects in Thailand, Vietnam and India.

The above comparison takes into account only the subjects commonly taught in all schools the world over, such as national language, mathematics and science. It is evident from the table that Thailand and Vietnam allow about the same number of periods for national language, which is a greater amount of time than India's educational system affords. In mathematics, India allows more time than Thailand and Vietnam by $1\frac{1}{2}$ hrs. per week. It is evident that the time allotment for subjects studied in schools varies from one country to another, being subjects to the particular educational viewpoint and other circumstances of each country.

Elementary Education Budget.

The budget allowance granted to the Department of Elementary Education in 1962 was 952.77 million Baht, 65% of the total educational allocation of the national budget. Out of this departmental budget, at least 90% was spent on teachers' salaries; in some years the percentage was as high as 97%. This means that for all the other expenses there remains only 3% to 10% of the departmental budget, an incredibly small sum to go towards such expenses as teaching equipment, construction, and repairs. The expenditures of the Department of Elementary Education in 1962, shown in Table 17, indicate that only 5% went into the construction and repair of school buildings and 1.70% into teaching materials. Thus, as long as the teachers' salaries remain such a large proportion of total expenditures, the chances of anything at all being undertaken to bring school books up-to-date, to design and build teaching aids, or to improve school conditions generally, are very slim indeed. It is time, then, to try to raise the allowance in the budget for the expenses other than teachers' salaries.

TABLE 17. BUDGET OF ELEMENTARY EDUCATION DEPARTMENT, BY TYPE OF EXPENDITURE, 1962.

Type of Expenditure	Baht	Percentage
Total	952.77 Million	100.00
Salaries and Wages	856.69 "	90.10
Remuneration	6.64 "	0.70
Ordinary Expenses	8.94 "	0.94
Materials and Supplies	16.35 "	1.70
Equipment	5.68 "	0.62
Sites and Buildings	56.35 "	5.72
Subsidies	2.12 "	0.22

Prediction of future enrollment.

Because of the increase in birth rate, a better understanding of the need for every child to be educated, and the government's efforts to raise the level of educational attainment, the number of school children goes up steadily each year. The Economic Development Council of Thailand has predicted that by 1965 the population will be thirty-two million; by 1970, thirty-seven million; by 1975, forty-four million; and by 1980, between forty-eight and fifty-three million. Consequently, the number of children entering the first grade of school is predicted to be 960,000 by 1965; 1,113,000 by 1970; 1,240,000 by 1975; and 1,300,000 by 1980.

Dr. Boonserm Weesakul and the UNESCO Mission⁹ also have predicted the future school population, employing various assumptions. These are reported below.

Projection I. The projection rests on these assumptions:

1. Total enrollments will increase by 142,000 children annually.
2. Present congestion rate.
3. The present drop-out rate continues (i.e., corresponds to a least square fit to a straight line).

Accordingly the prediction is that the number of elementary school pupils (grades 1-4) will be 4.27 million in 1965, 4.98 million in 1970, 5.69 million in 1975, and 6.40 million in 1980.

Projection II. The projection assumption are the compound rate of 4 per cent per annum due to (a) birth rate and (b) better enforcement policy.

Accordingly, the prediction is that the number of elementary pupils (grades 1-4) will be 4.33 million in 1965, 5.27 million in 1970, 6.41 million in 1975, and 7.80 million in 1980.

Projection III. The projection assumptions used being:

1. Constant fertility rate
2. Age specific mortality for 7 year-old
3. Present congestion and drop-out rate

Accordingly, the prediction is that the number of elementary school pupils will be 4.26-million in 1965, 4.89 million in 1970, 5.63 million in 1975, and 6.40 million in 1980.

Projection IV. The projection assumption used being the same as those of projection III but with adjusted failure and drop-out rates.

Accordingly, the prediction is that the number of elementary school pupils will be 4.09-million in 1965, 4.60 million in 1970, 5.29 million in 1975, and 6.01 million in 1980.

Projection V. The projection assumption used being the same as projection II but with "ideal" failure and drop-out. The result are that the number of elementary school pupils will be 3.70 million in 1965, 4.22 million in 1970, 4.86 million in 1975, and 5.52 million in 1980.

⁹ UNESCO, Educational Investment Programming Mission, Thailand, December, 1963, p. 121.

Of the five projections, the fourth seems likely to be the most realistic. However, there are several factors which may affect the established trends, and thus the figures obtained from these projections should not be used without great caution. The figure representing the five projections are shown together in Table 18.

TABLE 18. FIVE PROJECTIONS OF ELEMENTARY SCHOOL POPULATION, 1962-1980. (000's).

Year	Student Enrolment 1950-1962				
Projection:	I	II	III	IV	V
1963	3,986	4,004	3,968.6	3,966.0	3,810.3
1964	4,128	4,164	4,076.8	4,041.0	3,714.0
1965	4,270	4,331	4,260.7	4,086.0	3,699.6
1966	4,412	4,504	4,313.0	4,143.0	3,765.4
1967	4,554	4,684	4,468.1	4,223.0	3,864.4
1968	4,696	4,871	4,593.9	4,338.0	3,974.8
1969	4,838	5,066	4,704.8	4,473.0	4,097.9
1970	4,980	5,269	4,888.8	4,602.0	4,224.4
1971	5,122	5,480	5,037.4	4,740.4	4,351.4
1972	5,264	5,699	5,186.4	4,878.7	4,479.3
1973	5,406	5,927	5,335.3	5,016.8	4,607.0
1974	5,543	6,164	5,484.6	5,155.3	4,734.9
1975	5,690	6,411	5,633.7	5,294.4	4,862.5
1976	5,832	6,667	5,784.2	5,434.8	4,991.6
1977	5,994	6,934	5,935.6	5,576.5	5,121.5
1978	6,116	7,211	6,097.0	5,719.0	5,252.7
1979	6,258	7,499	6,211.3	5,862.5	5,384.2
1980	6,400	7,799	6,395.2	6,006.5	5,516.3

SECONDARY EDUCATION

According to the 1960 National Scheme of Education, secondary education has been defined as the schooling of children from grade 8 through grade 12. The secondary school level is divided into two sections: the lower section comprises grades 8, 9 and 10; and the upper section consists of grades 11 and 12.

Although there is this division of the secondary level into two sections, the curriculum embodies the same general aims for both sections. These objectives are:

1. To give to Thai youths a general education, the kind that is in keeping with their age and with the conditions of modern society; and to provide them with opportunities to explore their interests and aptitudes with a view to developing them fully.
2. To promote good physical and mental health of students, thus enabling them to lead more satisfying lives and to participate in improving the public health standards in their communities.
3. To promote desirable attitudes so as to enable them to live and cooperate as good citizens with others.
4. To provide them with skills and knowledge which will enable them to have an occupation or to go on for further education.

An important difference between the elementary and the secondary school curriculum is that at the secondary level the course offerings are categorized into two streams, the academic and the vocational. These differ slightly from each other in the matter of time devoted to subjects. In the academic type of school, academic subjects are studied 30 hours a week, with four to six hours devoted to arts and crafts, whereas in the vocational type, 20 hours a week are devoted to the study of academic subjects (the content of which is very similar to that of the academic type), and 15 hours a week to the vocational subjects. In the upper section of the secondary level, the academic stream divided into three subsections—the science section, the arts section, and the general section.

In dividing the secondary level curriculum into two main streams, the Ministry of Education is acting in accordance with the National Education Scheme of 1960. Also there is a new project, now in the experimental stage, to set up comprehensive schools which offer both vocational and academic subjects. It is the policy of the Ministry to encourage pupils in the vocational stream of the lower section of secondary education to enter the new comprehensive secondary schools, where such schools exist. The next move will be to modify the existing curriculum of the general division of the upper section of secondary education so that it will be similar to that of the comprehensive secondary school.

At this early stage of development, there are as yet only two schools of the comprehensive type. But the Ministry intends to set up many more, realizing how well such schools could serve the needs of Thai youths to have a basic training with which they might make a livelihood of some kind or other when they graduate from secondary schools.

The significant questions about secondary education in Thailand are, how many children enroll in it and how many of those who have actually entered grade 8 stay on to finish grade 10, and perhaps even grade 12. And how many of those who have graduate from grade 12 succeed in being accepted for study at the higher educational level—or, if they fail to get in, how well-equipped are they to make a livelihood for themselves. If one looks back at Figures 1 and 2 in the introductory section it can be seen that about 20% of the pupils who have finished grade 4 are able to go on. Then an additional 5% drop out or are examination failures, resulting in 15% only who will go on to complete elementary grade 7. This small percentage of students may move up to the secondary level. Moreover, research conducted by UNESCO officials reveals that the chances of the pupils completing secondary grade 5 (U.S. grade 12) are small, since only 80% of pupils entering the secondary grade 1 (U.S. grade 8) stay on until grade 3 (U.S. grade 10), and only 20% complete grade 5 (U.S. grade 12). Therefore, it is the opinion of many that secondary education in

TABLE 19. STUDENT POPULATION IN SECONDARY SCHOOLS, 1956-1962, BY GRADE AND SEX.

Year	Sex	Pupils by grade								Total	Number of increase
		Grade 8	Grade 9	Grade 10	Grade 11		Grade 12				
					Science	Arts	Science	Arts	Sub-Total	Total	Number of increase
1956	M	33,535	25,153	19,275	3,308	496	1,996	370	84,133	124,009	
	F	15,802	11,694	9,124	1,046	843	784	583	39,876		
1957	M	38,148	28,531	22,273	4,232	531	2,258	310	96,283	144,950	20,941
	F	19,793	14,092	10,674	1,470	950	1,010	678	48,667		
1958	M	44,437	35,600	28,195	5,464	635	3,377	423	118,131	181,804	36,854
	F	24,430	19,192	14,401	2,068	1,084	1,519	979	63,673		
1959	M	49,096	39,802	33,427	7,315	1,058	4,982	576	136,256	213,402	31,598
	F	28,664	22,296	17,737	3,285	2,013	1,941	1,210	77,146		
1960	M	52,845	43,612	37,374	8,135	1,643	4,235	721	148,565	239,409	26,007
	F	32,395	25,858	21,170	4,037	3,052	2,859	1,473	90,844		
1961	M	57,917	46,739	41,620	11,054	2,195	6,180	1,077	166,782	270,756	31,347
	F	35,873	29,219	24,876	5,080	3,762	2,993	2,171	103,974		
1962	M	59,473	51,093	44,531	12,313	1,970	7,704	1,115	178,235	293,621	22,865
	F	37,144	33,155	28,405	6,589	3,947	3,790	2,356	115,386		

Thailand is for the exceptional few. This is a reason why few children of secondary education age are enrolled at this level of education.

This report is being written during a period of transition when the secondary school curriculum is being re-evaluated after having been modified to make it consonant with the National Educational Scheme of 1960. Prior to the adoption of this modified secondary school curriculum in 1962, "secondary education" referred to an eight-year period of schooling beyond elementary grade 4 which was divided into three years in the lower secondary section (grades 5-6-7), three years in the upper secondary section (grades 8-9-10) and two years in pre-university schooling (grades 11 and 12).

Number of secondary school pupils.

Before going on to discuss the problems concerning children at the secondary level, Table 19 presents the increase in enrollments in secondary schools all over the country.

It may be seen that in 1962 the nation's secondary pupils from grade 8 to grade 12 amounted to 293,621—1.05 % of the total population—and that the average increase from the year 1957 to 1962 was almost 30,000 pupils a year. This is rather small compared to the average increase of 125,000 (1956-1960) at the elementary level.

TABLE 20. ENROLLMENT OF SECONDARY SCHOOL STUDENTS IN GOVERNMENT AND IN PRIVATE SCHOOLS, BY GRADE AND SEX, 1963.

Grades	Type of school						Total	
	Government			Private				
	Male	Female	Sub-total	Male	Female	Sub-total		
Grade 8	30,171	20,565	50,736	28,334	16,848	45,182	95,918	
Grade 9	27,106	18,851	45,957	24,864	14,835	39,699	85,656	
Grade 10	24,219	17,595	41,814	24,231	14,231	39,019	80,833	
Sub-Total	81,496	57,011	138,507	77,986	45,914	123,900	262,407	
Grade 11								
A	1,152	2,074	3,226					
Arts	4,290	2,819	7,109					
Science	66	183	246					
General	—	58	58					
B Vocational Stream								
Grade 12								
A	487	960	1,447					
Arts	2,356	1,503	3,859					
Science	—	44	44					
General	—	—	—					
B Vocational Stream								
Sub-total	8,359	7,641	15,992	13,275	9,339	22,614	38,606	
Grand total	89,847	64,652	154,499	91,261	55,253	146,514	301,013	

Note: A = Academic Stream; B = Vocational Stream.

Secondary school students in government and private schools.

One can compare the number of enrollments in government schools and private schools from Table 20.

It can be observed that secondary school pupils of the lower section (grades 8-9-10) are enrolled almost equally in government and private schools. This may be because there are not enough government schools to accomodate students and hence the only alternative for those who can not enroll in the government schools is to rely on private schools.

As for the upper section (grades 11 and 12) of the secondary level, the number of enrollments in private schools is greater than that in goverment ones. This may be because the policy of admission in the government schools is rather restrictive (only those who pass the entrance examination are chosen), or because most children leave their school to enter vocational schools or other.

Number of secondary school students per classroom.

The next point to be considered is the number of students in a classroom. This will give some indirect idea of the quality of secondary school teaching. It is the policy of the Ministry of Education that the number of pupils in a classroom shóuld not exceed 30. Before discussing the matter further, reference should be made to Table 21.

TABLE 21. PUPIL-CLASSROOM RATIO IN SECONDARY SGHOOLS BY GRADE AND BY TYPE OF SCHOOL (PRIVATE OR GOVERNMENT).

Year	Grade 8		Grade 9		Grade 10		Grade 11		Grade 12	
	Gov.	Priv.	Gov.	Priv.	Gov.	Priv	Gov.	Priv	Gov.	Priv
1957	39	31	38	29	36	27	34	38	24	31
1958	40	31	38	29	37	28	34	35	28	32
1959	40	31	38	29	37	27	35	37	28	40
1960	40	29	37	29	37	28	38	33	31	29
1961	38	29	36	28	35	28	38	38	29	38
1962	37	27	36	26	30	26	36	36	30	34

Source: The Joint Thai-USOM Human Resources study "Preliminary Assessment of Eduction and Human Resources in Thailand", 1962.

It is evident that the number of pupils per classroom in the lower secondary school section has changed only very little during the period 1957-1962. It is interesting to note that the number of pupils per classroom at this level in the private schools is less than in the government schools, which confirms the fact that more pupils wish to study in the government

school than in the private schools where they have to pay more tuition fees. On the other hand, at the upper secondary level the number of pupils per classroom in the private schools is greater than in the government schools. For example, in 1961 there were 29 per classroom in the government schools and 38 per classroom in the private schools in grade 12. This again reflects the fact that pupils who have failed the entrance examinations for government schools have to go to the private schools.

Secondary schools in the Bangkok-Dhonburi area and in the provinces.

The Department of Secondary Education classifies the secondary school as follows :

1. Secondary schools in Bangkok and Dhonburi.
2. Secondary schools in areas other than Bangkok and Dhonburi.

In 1962 there were 409 government secondary schools. Of these, 60 were in the Bangkok-Dhonburi area with enrollment totaling 53,663 and 349 were located throughout the provinces with enrollment totaling 114,292.

Of the 60 government secondary schools in the Bangkok-Dhonburi area, 31 were in the lower secondary section with 48,307 pupils enrolled—30,423 males and 17,884 females—and 29 were in the upper secondary section with 5,492 pupils enrolled—3,135 males and 2,357 females.

Of the 349 government secondary schools in the provinces, 263 were in the lower secondary section with 105,703 pupils—60,215 males and 45,488 females—and 86 were in the upper secondary section with 8,589 pupils—4,673 males and 3,916 females.

TABLE 22. NUMBER OF SECONDARY SCHOOL PUPILS IN THE BANGKOK-DHONBURI AREA AND IN THE PROVINCES, 1962, BY GRADE AND SEX.

Grade	Bangkok-Dhonburi area			Provincial area		
	Male	Female	Total	Male	Female	Total
Grade 7	8,381	4,038	12,419	8,505	7,762	16,267
Grade 8	8,891	5,284	14,175	19,908	14,406	34,314
Grade 9	7,676	5,655	12,721	17,398	12,770	30,168
Grade 10	5,339	3,507	8,846	14,404	10,550	24,954
Grade 11						
Arts	354	684	1,002	546	1,009	1,555
Science	1,457	736	2,193	2,367	1,613	3,980
General	-	32	32	-	67	67
Grade 12						
Arts	238	430	668	274	430	704
Science	1,086	511	1,597	1,486	767	2,283
Total	33,422	20,241	5,3663*	64,888	49,404	114,292

* Excluded 136 students in grades 5 and 6 and the students in the pre-university school.

Source: Department of Secondary Education, *Annual Report On Secondary Education, 1962*.

Table 22 indicates the number of pupils in the Bangkok-Dhonburi area and in the provinces. With 53,799 pupils enrolled in the 60 schools in the Bangkok-Dhonburi area, in 1962 the average was about 894 pupils per school. And 114,292 students in the 349 provincial schools resulted in an average of about 330 pupils per school. Table 22 also shows that there were 3,227 grade 11 students in the Bangkok-Dhonburi area resulting in an average of 54 grade 11 students per school, whereas there were 5,602 students in the provinces, giving an average of 14 grade 11 pupils per school. Thus, the above figures show the density in the Bangkok-Dhonburi area to be three to four times greater than in the provinces. The reasons for this may be as follows:

1. Parents in the provinces prefer to send their children to the Bangkok-Dhonburi area because they believe the standard of this area to be higher than that of the local schools.
2. All the institutions of higher education in Thailand are situated in the Bangkok-Dhonburi area.
3. Because of the comparative ease permitted by the conditions of living and the greater accessibility to educational resources in the Bangkok-Dhonburi area, pupils in this area have better chances than those in the provinces of getting into the secondary schools.

Qualifications of secondary school teachers.

For the sake of convenience the qualifications of secondary level teachers may be classified as follows:

1. Degree qualification — from Bachelor's Degree upward.
2. Diploma qualification or its equivalent — a diploma in teaching granted after 4 to 5 years of studies beyond grade 10.
3. Lower than diplomas.

The number of secondary school teachers in government schools according to qualification is as shown in Table 23.

TABLE 23. GOVERNMENT SCHOOL TEACHERS' QUALIFICATIONS, 1963.

Levels of Qualification	Subtotal	Percentage	Male		Female	
			Number	Percentage	Number	percentage
Degree	1,258	16.27	439	12.68	819	19.17
Diploma	4,409	57.02	2,134	61.79	2,271	53.16
Lower than the diploma level	2,065	26.71	883	25.52	1,182	27.67
Total	7,732	100.00	3,460	100.00	4,272	100.00

The qualifications of the secondary school teachers are rather high in comparison with those of the elementary schools. If the curriculum of 1960 is taken as a basis for determining the instructional skills needed by teachers, then, in the writer's opinion, all secondary school teachers ought to be at least diploma-holders. Using this criterion it can be seen that 26.71 per cent of the secondary school teachers have not attained the minimum recommended level of qualification. A close study of the curricula of teacher training schools will reveal the inadequacy of some levels of current teacher training.

The levels of qualification of secondary school teachers in general have been considered. It is instructive to analyze the over-all figures with respect to comparison of the central administrative area (Bangkok-Dhonburi) with the rural administrative area (the provincial area).

TABLE 24. THE QUALIFICATION LEVEL OF GOVERNMENT SECONDARY SCHOOL TEACHERS IN THE BANGKOK-DHONBURI AREA AND IN THE PROVINCES, 1963.

Level of Qualification	Bangkok-Dhonburi						Provinces					
	Total		Male		Female		Total		Male		Female	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
Degree	566	23.50	142	16.17	424	27.71	693	13.02	297	11.50	396	14.44
Diploma	1314	54.57	583	66.40	731	47.70	3065	58.13	1555	60.22	1540	56.16
Lower than the diploma level	528	21.93	153	14.43	375	24.51	1536	28.85	730	28.24	806	29.39
Total	2408	100.00	878	100.00	1530	100.00	5324	100.00	2582	100.00	2442	100.00

The following points become clear from an examination of Table 24:

1. As many as 566 degree-holding teachers in the Bangkok-Dhonburi area serve its 60 schools, there being an average of eight or nine such teachers per school, whereas in the provinces only 693 degree-holding teachers are teaching in as many as 349 schools, resulting in an average only two such teachers per school. With respect to the number of diploma-holding teachers, in the Bangkok-Dhonburi area the average is 22 per school as opposed to eight per school in the provinces. Conversely, the average number of pupils per degree-holding teacher is 47 pupils in the Bangkok-Dhonburi area and 165 pupils in the provinces. It is evident that something should be done about the distribution of well-qualified teachers in the secondary schools.

2. More female teachers than male are teaching in the secondary schools of the Bangkok-Dhonburi area. Since the number of female degree-holding teachers exceeds that of their male equivalents by three times, the average number of better qualified teachers in the Bangkok-Dhonburi area is higher than that of the provinces.

3. In the provinces there is a greater number of teachers with qualification lower than a teaching diploma.

It may be concluded, therefore, that steps should be taken to raise the number of well-qualified teachers up to the level of those in the Bangkok-Dhonburi area. This will be one way to help raise the quality of teaching in the provinces up to the same standard as in the Bangkok-Dhonburi area.

Besides improving the quality of teaching in the provincial schools such a change would help to promote the desire of parents to send their children to local secondary schools, which ultimately would solve the problem of the influx of youths into Bangkok from the provinces.

The qualifications of teachers in private secondary schools.

Table 25 shows the qualifications of teachers in private secondary schools throughout the country.

TABLE 25. THE QUALIFICATIONS OF TEACHERS IN PRIVATE SECONDARY SCHOOLS, 1963.

Level of Qualification	Central		Rural		Total	
	Number	%	Number	%	Number	%
Degree	649	4.46	218	1.09	867	2.51
Diploma	1,778	12.20	1,376	6.88	3,158	9.12
Lower than the diploma level	12,140	83.34	18,407	92.03	30,547	88.37
Total	14,567	100	20,001	100	34,568	100

Source: Private School Division, Department of Secondary Education, *Private School Statistics*, 1963.

The above table indicates that comparatively few of the teachers in private secondary schools possess adequate qualification—16 % of the teachers in the government schools are degree-holders, compared to only 3 % in the private ones; and about 57 % in the government schools are diploma-holders, compared to only 9 % in the private ones. 88 % of teachers in the private schools possess qualifications lower than the diploma level and thus need further training.

A comparison between the qualifications of the private school teachers in the Bangkok-Dhonburi area and those in the provinces shows the same result as the comparison between the qualifications of government secondary school teachers in the different areas, i.e. the provincial teachers are not so well-qualified as the Bangkok-Dhonburi teachers.

The secondary school curricula.

The secondary school curricula have been mentioned briefly earlier in this paper. A more intensive examination of the secondary level curriculum will be helpful in discerning the educational problems and needs of students at this level. Table 26 shows the subjects and the number of hours allotted to them.

TABLE 26. TIME ALLOTMENT PER WEEK IN THE SECONDARY SCHOOL CURRICULUM, 1948. AND 1950.

Subject	Hours Per Week			
	Grades 5-6-7.	Grades 8-9-10	Grades 11 - 12 Arts	Science
Thai	6	5	4	3
Foreign Language,	6	6	10 - 11	6
Social Studies	4	5	3 - 4	3 - 4
Science	4	3	3	6 - 7
Mathematics	4	6	5	6 - 7
Miscellaneous*	6	5	1	1
Total	30	30	26 - 28	25 - 28

*Includes Arts, Music, Physical Education, Manual work, and others.

Source: Ministry of Education, *Secondary School curriculum, 1948*, and *Secondary School Curriculum, 1950*.

The following points should be noted:

1. The number of hours allotted to the study of Thai Language decreases as the pupils move up, from six hours in the upper elementary section to five in the lower secondary section, and to three or four hours only in grades 11 and 12.
2. The number of hours allotted to the study of foreign languages, mostly English, either remains the same or increases as students advance in grade-level. For example, students electing the arts curriculum of grades 11 and 12 have ten to eleven hours of English per week.
3. The number of hours devoted to mathematics increases in the top grades.

Table 27 shows the time allotment for some main subjects in the lower and upper secondary sections according to the 1960 curriculum which is now in effect.

A comparison of the curricula of 1948, 1950 and 1960 shows only minor changes. A change that deserves mentioning is that in the 1950 curriculum the upper secondary section is divided into academic and vocational streams, and the general (academic) stream is subdivided into science concentration, arts concentration, and general.

It must be said here that the newly introduced changes and improvements accord well with the conditions of modern society and with the needs of children nowadays. This

TABLE 27. TIME ALLOTMENT PER WEEK IN THE SECONDARY SCHOOL CURRICULUM, 1960.

Subject	Hours Per Week						
	Lower Level (Grades 8 — 9 — 10)		Upper Level Grades 11 — 12)				
	General Stream	Vocational Stream	General (academic) Stream			Vocational Stream	
			Science	Arts	General		
Thai	4	3	3	5	5	3	
Foreign Language	4 - 6	4	6	8	6	4	
Social Studies	4	2	3	5	5	3	
Science	3	3	10	4	4	—	
Mathematics	5	3	6	6	2	2	
Vocational	—	17	—	—	4 - 8	18 - 23	
Miscellaneous *	8 - 10	3	2	2	2 - 4	—	
Total	30	35	30	30	28 - 34	30 - 35	

* Includes Physical Education, Health and Hygiene, Arts Education, and Practical Arts.

Source: Ministry of Education, *Secondary School Curriculum, 1960*.

curriculum is the first effort made to provide secondary school students with specialized vocational training for their future occupations. It remains to be discussed to what extent the new 1960 curriculum is consonant with the existing conditions of the secondary schools. Only after an examination of the six most important factors concerning the condition of secondary schools can an answer to this question be found. These factors are as follows:

1. The qualifications of teachers.
2. The conditions of school buildings and their compounds.
3. The availability of equipment for educational purposes especially workshops, laboratories, and instruments.
4. The budget allocation for secondary education.
5. The attitudes of parents and children toward vocational training.
6. The integration of educational purposes of secondary schools with those of institutions of higher education.

These factors should have been considered before the Department of Secondary Education put into effect their revised 1960 curriculum, since these factors are crucial to the feasibility of developing a practical curriculum which should meet the needs of today's youth.

To give the reader a better perspective, a comparison has been made between the present secondary school curriculum of Thailand and that of selected other countries. The data are presented in Tables 28 and 29.

TABLE 28. TIME ALLOTTED TO VARIOUS SUBJECTS IN THE LOWER SECONDARY SCHOOL CURRICULUM OF THAILAND AND OF FOREIGN COUNTRIES.

Subject	Thailand	Cambodia	Indonesia	Japan	Korea
Mathematics	3 - 5	4	4 - 8	4	3 - 4
Science	3	2 - 4	5 - 7	4	4
National Language	4	4	2 - 5	5	4
Foreign Language	4 - 6	7	5	3	3 - 5

Source; Ministry of Education, Thailand, *Secondary School Curriculum*, 1960. p. 3.

UNESCO *Secondary Education in Asian Countries*, 1961.

Ministry of Education and National Commission for UNESCO, Republic of Korea, *Education in Korea*, 1963, p. 97.

Ministry of Education, Japan, *Japan's Growth and Education, Educational Development in Relation to Socio-Economic Growth*, 1963, p. 210-211.

TABLE 29. TIME ALLOTTED TO VARIOUS SUBJECTS IN THE UPPER SECONDARY SCHOOL CURRICULUM OF THAILAND AND OF FOREIGN COUNTRIES.

Subject	Thailand	Indonesia	Philippines	Korea	Japan
Mathematics	6	7 - 8	7	3 - 6	6 or 9
Science	10	10 - 14	7	16	12 - 15
National Language	3	No Available Data	5	3	2 - 3
Foreign Language	6	" "	9	5	

Source , Ministry of Education, Thailand, *Secondary School Curriculum*, 1960, p: 3.

UNESCO *Secondary Education in Asian Countries*, 1961.

Ministry of Education and National Commission for UNESCO, Republic of Korea, *Education in Korea* 1963, p. 97.

Ministry of Education, Japan, *Japan's Growth and Education, Educational Development in Relation to Socio-Economic Growth*.

Table 28 shows that in grades 8 - 9 - 10 the time allotment for various subjects is much the same in Thailand as in other countries. Thai pupils at the lower secondary level have less hours in sciences than Japanese, Korean and Indonesian pupils, but more in languages than Japanese pupils. Japan, as a more industrialized country, appears to place greater emphasis on the study of the sciences than of foreign languages.

As for the upper secondary level, the allocation of time for various subjects shows much the same condition concerning the study of the sciences as obtain in the lower secondary grades. The shortage in Thailand of scientists may be attributed to a lack of interest and of the right attitude on the part of pupils. Incentives are needed to encourage pupils to apply

themselves seriously to the study of the sciences with a view to making a livelihood out of it. This problem is linked up with that of the shortage of science teachers. From the survey conducted by the Department of Educational Research of the College of Education in 1964, no less than 10% of the secondary school students concentrating in science, who applied for admission into institutions of higher learning, changed over and enrolled themselves in the Social Science or the Arts Faculties. The reason for this they believed advanced sciences to be beyond their intellectual capacity and that scientific studies left them with little chance of learning a foreign language, thereby lessening their opportunities of being able to study abroad. An insufficient number of students specializing in science courses poses a problem, and steps should be taken to remedy this.

The results of secondary school examinations.

One way of judging the efficiency of the secondary level of the education system is by looking at the examination results, such as are shown in Table 30.

TABLE 30. PERCENTAGE OF STUDENTS IN GOVERNMENT SCHOOLS WHO PASSED THE FINAL EXAMINATION AT GRADES SEVEN, TEN AND TWELVE.

Grade	Years		
	1953	1957	1962
Grade 7	41.30 %	95.38 %	96.49 %
Grade 10	23.50 %	98.20 %	92.20 %
Grade 12	25.04 %	70.53 %	78.50 %

Source : Attagara, Bhunthin, *The Building up of Youth in the Interest of National Security*, 1961.
Secondary Education Department, *Annual Report, 1953-1962*.

It is clear from the above table that during the period 1953-1962 the trend has been for an increasing percentage of students to pass the final examination. The percentages of successful candidates of grades 7 and 12 have risen, although that for grade 10 shows a decrease in 1962. A detailed summary of the examination results in grade 12 is provided in Table 31.

Table 32 compares the results of grade 12 examinations in the government schools and in the private schools.

TABLE 31. NUMBER OF STUDENTS WHO PASSED THE FINAL EXAMINATION AT GRADE TWELVE IN THE GOVERNMENT SECONDARY SCHOOLS DURING THE PERIOD 1958-1962.

Year	Major Field	Number of Examinees	Number of Successful Examinees	Percentage of Successful Examinees
1958	Arts	917	718	78.29
	Science	2,705	2,239	82.77
1959	Arts	1,122	850	75.75
	Science	3,545	2,461	69.42
1960	Arts	1,472	1,254	85.19
	Science	4,642	3,449	74.29
1961	Arts	1,595	1,133	71.80
	Science	4,566	2,998	65.80
1962	Arts	1,711	1,517	88.66
	Science	5,017	4,188	83.47

Source: Secondary Education Department, *Annual Report, 1962*. p. 145.

TABLE 32. THE NUMBER OF STUDENTS WHO PASSED THE FINAL EXAMINATION AT GRADE TWELVE IN THE GOVERNMENT SECONDARY SCHOOLS AND IN THE PRIVATE SECONDARY SCHOOLS, 1962, BY MAJOR FIELD.

Major Field	Government Schools			Private Schools		
	Number of Examinees	Number of Successful Examinees	Percentage	Number of Examinees	Number of Successful Examinees	Percentage
Arts	1,711	1,517	88.66	2,188	1,527	69.78
Science	5,017	4,188	83.47	5,618	4,118	73.30

One basis for the observed figures may be that the quality of education in the government schools is higher. The difference between the percentage of successful students in the arts program in government schools compared to that in private schools was greater than the difference between the percentage of successful students in the science program in the two school systems.

The proportion of secondary school pupils who enter grade 12.

The percentage of students who continue progressing into higher grade-levels in secondary schools is one indication of the quality of teaching in these schools. To give the reader a clearer

view of the chances of pupils to go on to attend grade 12. Table 33 shows the continued enrollment of two groups of pupils who entered grade 8 in different years.

TABLE 33. THE CONTINUING ENROLLMENT OF TWO SAMPLES OF SECONDARY SCHOOLS STUDENTS.

Grade	School Year	Government School		Private School	
		Number	Percentage	Number	Percentage
First Group					
Grade 8	1954	17,170	100.00	16,723	100.00
Grade 9	1955	15,771	91.79	14,451	86.41
Grade 10	1956	14,784	86.04	13,263	79.30
Grade 11	1957	3,370	19.61	3,813	22.80
Grade 12	1958	2,490	14.49	2,406	14.39
Second Group					
Grade 8	1959	35,507	100.00	41,747	100.00
Grade 9	1960	27,260	76.77	30,815	73.81
Grade 10	1961	30,215	85.09	35,780	85.70
Grade 11	1962	10,063	28.34	14,673	35.15
Grade 12	1963	6,322	17.80	7,291	17.46

Source Department of Educational Techniques, *Educational Statistics*, 1954-1963.

A slightly higher percentage of the second group of students entered grade 12 than did the first group. A comparison of this data with the enrollment figures for elementary school pupils shows that the secondary school pupils have greater likelihood of entering the top grade of their level. About one secondary school pupil out of 6 or 7 who enter grade 8 stays on to enter grade 12, whereas only one elementary pupil out of 12 who enter grade 1 continues on and enters grade 7.

Application for admission of secondary school graduates to institutions of higher learning.

One other point of concern about secondary education is the transition from this level of schooling to higher education: almost every pupil completing grade 12 wants to proceed to the university, but only few actually get in. For example, in 1963 there were 20,962 who took the entrance examination for the various universities, but only 3,869 were admitted (see Table 34). Those who miss their first chance, knowing of no alternative through which to find themselves a career, wait for the next year's entrance examinations. As a result, the number of candidates presenting themselves at these examinations accumulate year after year even though the universities' capacity to admit students remains much the same. This

accumulation of unsuccessful candidates for university admission is coupled with the annual increase of pupils completing grade 12 (an increase of 10,000 in 1963, and 7,000 in 1964), thus giving rise to complications such as increased unemployment and consequent waste of manpower.

TABLE 34. PERCENTAGE OF SUCCESSFUL CANDIDATES IN THE UNIVERSITY ENTRANCE EXAMINATIONS, 1962-1963.

Year	No. of Grade 12 Graduates	No. of Applicants	No. of Admissions	% of Grade 12 Graduates	% of Applicants
1962	9,934	19,005	3,752	38	20
1963	11,350	20,962	3,869	34	18

Secondary education budget.

In 1962 the budget of the Department of Secondary Education amounted to 230,961,500 Baht. This was allocated according to the administrative needs of the Department as shown in Table 35.

TABLE 35. EXPENDITURES OF THE DEPARTMENT OF SECONDARY EDUCATION, 1962.

Type of Expenditure	Amount (Baht)	Percentage
Total	230,961,500	100.00
General Business Administration	14,379,900	6.22
Government School Administration	148,826,300	64.43
Private School Administration	63,044,400	27.20
Pre-university School Administration	4,710,900	2.15

Source: Secondary Education Department, *Annual Report*, 1962.

Concerning the budget of the Secondary Education Department, the following points should be noted:

1. About 27.20 % of the total amount was spent for the administration and control of the private school section. The proportion set aside for this purpose in other recent years such as 1960 and 1961 was about the same, i.e. 26-27 %.

2. The pre-university schools (grades 11 and 12 only) received 4,710,900 Baht, a large sum compared with 148,826,300 Baht spent on the other 406 government secondary schools all over the country.

A detailed listing of the expenditures of this Department is reported in Table 36.

TABLE 36. BUDGET OF THE DEPARTMENT OF SECONDARY EDUCATION BY TYPE OF EXPENDITURE, 1962.

Type of Expenditure	Amount (in Baht)	Percentage
Total	230,961,500	
Salaries	116,284,100	50.34
Wages.	5,626,200	2.43
Remuneration	15,045,100	6.51
Ordinary Expenses	2,143,300	0.93
Materials and Supplies	913,600	0.39
Equipment	1,004,700	0.43
Subsidy	62,615,500	27.23
Sites and Buildings	27,029,000	11.75

Source : Secondary Education Department, *Annual Report, 1962*.

The greatest expense, as may be seen from the above table, is teachers' salaries and wages, which amounted to 53 % of the secondary education budget; 27 % was used for subsidizing the private secondary schools; and only 12-13 % went for sites and buildings and educational equipment. The condition here is similar to that of the Department of Elementary Education with respect to the pattern of expenditures, for most of the money goes into teachers' salaries and wages. It seems advisable that a higher proportion of the total expenditure be devoted to the improvement of school buildings and the purchase of teaching materials. The average annual expenditure on each government secondary school pupil is 893 Baht, whereas on each private secondary school pupil is 317 Baht.

Prediction of the secondary school population.

It became clear from the earlier comments on the needs of children at the elementary education level that the need for educational provisions will become greater every year. The rate of increase at the secondary education level may also be expected to be greater. The following estimates of future secondary school enrollment are provided:

1. According to the figures of the Department of Secondary Education,
in 1965 there will be about 388,500 students,
in 1970 there will be about 544,000 students, and
in 1974 there will be about 674,000 students,
2. According to Dr. Boonserm,
in 1965 there will be about 659,400 students,
in 1970 there will be about 1,351,500 students,
in 1975 there will be about 2,043,600 students, and
in 1980 there will be about 2,735,600 students,

Table 37 shows the number of students in the upper elementary education level and in the secondary education level. The purpose of presenting this is to show one body of data used in establishing predictions of secondary school enrollment, as shown in Table 38.

TABLE 37. STUDENTS POPULATION AT THE UPPER ELEMENTARY LEVEL AND THE SECONDARY LEVEL DURING THE YEARS 1955-1962.

Year	Number of Students	
	Upper Elementary	Secondary Level
1955	209,799	100,445
1956	245,996	123,816
1957	274,584	141,726
1958	316,668	182,077
1959	347,160	212,651
1960	365,905	240,060
1961	375,953	270,973
1962	364,826	288,058

TABLE 38. SECONDARY SCHOOL ENROLLMENT PROJECTIONS.

Year	Projection I	Projection II	Projection III
1963	425,000	425,800	329,000
1964	470,000	524,900	358,000
1965	500,000	659,400	388,500
1966	530,000	797,900	419,000
1967	560,000	936,300	449,500
1968	590,000	1,074,700	480,000
1969	620,000	1,213,000	512,000
1970	650,000	1,351,500	544,000
1971	680,000	1,489,900	576,000
1972	710,000	1,628,300	608,000
1973	740,000	1,766,700	641,000
1974	770,000	1,905,100	674,000
1975	800,000	2,043,600	
1976	830,000	2,181,900	
1977	860,000	2,320,300	
1978	890,000	2,458,700	
1979	929,000	2,597,200	
1980	950,000	2,735,600	

* Projected by the Educational Techniques Department.

** Projected by the Secondary Education Department.

Source: UNESCO, *Educational Investment Programming Mission*, Thailand, Dec. 1963, p. 121.

VOCATIONAL EDUCATION

The problems and needs related to vocational education which are the responsibility of the Department of Vocational Education will be considered in this study. Since the first National Scheme of Education was established in 1898, it is evident that vocational education has been one of the main educational concerns of the Thai people. The vocational education program has been improved from time to time to suit the requirements of a changing society. In 1951 vocational education was divided into three levels:

1. Lower level (grades 5-6-7) which admits students from grade 4.
2. Upper level (grades 8-9-10) which admits students from grade 7.
3. Higher level (grades 11-12-13) which admits students from grade 10.

In accordance with the 1960 National Scheme of Education, the Department of Vocational Education modified its program to meet the requirements of the national economy. Vocational education at this time was divided into five levels:

1. Vocational short courses with a duration of not more than a year.
2. Lower level (grades 5-6-7), which has not been operated since 1963.
3. Upper level, with a three-year duration (grades 8-9-10).
4. Senior level, with a three-year program (grades 11-12-13).
5. Technical level, with a 2 or 3 year program.

In addition to providing this structured selection of courses to prepare persons to practise various specialized trades, the Department of Vocational Education also aims to produce teachers for vocational courses. Table 39 provides a basis for the discussion of various problems in vocational education.

TABLE 39. NUMBER OF VOCATIONAL STUDENTS ENROLLED IN GOVERNMENT SCHOOLS, BY DIFFERENT LEVELS, 1958-1962.

Year	Lower level (grades 5-6-7)	Upper level (grades 8-9-10)	Senior level (grades 11-12-13)	Technical level (grades 14-15)	Teacher Training	Short courses	Total
1958	13,483	23,257	24,377	3,308	1,026	335	65,786
1959	7,574	25,631	29,170	4,612	1,151	402	68,540
1960	2,955	24,479	28,634	4,897	1,404	1,945	64,314
1961	398	17,561	29,633	4,900	1,291	1,921	55,704
1962	235	10,431	27,011	4,761	1,235	4,417	48,140

* This level is no longer operated since 1963.

Source: The Joint Thai-U.Som Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1961, p. 346-50.

The last column in the above table indicates the decreasing number of students enrolled each year. A reason for this might be that students have less interest in vocational education than in other types of education. The number of students at the senior and technical levels increased slightly, while the number enrolled in short courses increased greatly. The number of students in vocational teacher training schools remained almost constant. If changes in the number of students enrolled are used as a criterion measure to determine the educational needs of children for this type of education, it could be concluded that:

1. Short courses were the most needed.
2. Students found senior and technical level courses increasingly useful compared to lower and upper level courses.

A great number of students were training in private institutions as well as in schools under the jurisdiction of the Department of Vocational Education. Private institutions enrolled 41,088 students in 1961, 51,009 in 1962, and 42,670 in 1963. Thus the total number of students in private trade schools was almost equal to the number of students in schools under the Department of Vocational Education.

Vocational education enrollments by type of course and level.

The educational needs and interest of children in various types of vocational courses can be observed in Tables 40 and 41.

It can be seen that the number of students in some courses was quite low. For example, in the period 1960-62 there were few students in Photography, Printing and Sales courses in the teacher training section and only six or seven students in Pipe welding and in drafting at the technical level. Such small classes may be considered uneconomical. Thus it is recommended that these courses be discontinued if the number of students remains small.

In some courses the enrollment decreased during 1960-1962 at the lower and upper levels, but increased at the senior level. Examples of this are seen in Wood-Working, Automechanics, Electricity, Radio and Television, Business Administration, Girls' trades and Agriculture courses. This might be due to the following reasons:

1. Students graduating from grade 4 had less interest in this type of schooling. Thus many children entered secondary schools in the hope of continuing their education in colleges. Those who graduated from grade 10 but missed the chance of entering grade 11 turned their attention to vocational education at the senior level.
2. The Department of Vocational Education had a policy of raising the standard of vocational schools at the senior level to equal that of the secondary schools. Thus students paid more attention to vocational education at this level.
3. In 1960 a great number of students graduated from grade 12 who could not enter any universities. Therefore, the Department of Vocational Education admitted more students at the senior and technical levels.

TABLE 40. NUMBER OF VOCATIONAL STUDENTS ENROLLED IN GOVERNMENT SCHOOLS BY TYPES OF COURSE AND LEVEL, 1960-1962.

Types of Courses	Short Course			Lower level Grades 5-6-7			Upper level Grades 8-9-10		
	1960	1961	1962	1960	1961	1962	1960	1961	1962
	—	—	—	1,943	189	18	11,685	8,416	5,144
Building Const.	—	—	—	—	—	—	20	100	44
Masonry	—	—	—	298	50	—	227	187	198
Painting	—	—	—	29	—	—	44	69	83
Small boat building	—	—	—	28	—	—	79	85	44
Mechanical Trades	—	—	—	—	—	—	212	110	49
Automechanic	—	—	—	—	—	—	464	331	127
Machinist	—	—	—	—	—	—	201	152	87
Welding	—	—	—	—	—	—	127	103	46
Metal Work	—	—	—	60	—	—	211	108	43
Electricity	—	—	—	—	—	—	90	83	53
Radio & T.V.	—	—	—	—	—	—	109	77	37
Ceramics	—	—	—	—	—	—	33	12	8
Nielloware	—	—	—	13	—	—	20	17	13
Pottery	—	—	—	24	4	—	27	26	19
Girl's Trades	—	—	—	101	31	16	8,016	5,262	2,761
Weaving	—	—	—	—	—	—	78	29	49
Barbering	—	—	—	260	—	—	—	—	—
Tailoring	—	—	—	—	—	—	18	22	30
Foreign Language	—	—	—	—	—	—	113	77	89
Leather Work	—	—	—	—	12	—	87	81	70
Agriculture	—	—	—	131	—	—	2,472	2,069	1,537
Primary Extension	—	—	—	168	112	201	146	145	—
Voc. Short-Courses	1,945	1,921	4,417	—	—	—	—	—	—
Total	1,945	1,921	4,417	2,955	398	235	24,479	17,561	10,481

Source: The Joint Thai-USOM Human Resources Study. *Preliminary Assessment of Education and Human Resources in Thailand*, 1961. p. 346.

4. For various reasons, these students whose ages about 16-18 had a strong desire to be independent and to improve their economic and social status, and thus they chose to enroll in these type of classes in order to develop skills which would be advantageous to their vocational advancement.

TABLE 41. NUMBER OF VOCATIONAL STUDENTS ENROLLED IN GOVERNMENT SCHOOLS BY TYPES OF COURSES AND LEVEL, 1960-1962 (SENIOR, TECHNICAL AND TEACHER TRAINING LEVEL).

Types of Courses	Senior level (grades 11-12-13)			Technical level (grades 14-15)			Teacher training		
	1960	1961	1962	1960	1961	1962	1960	1961	1962
Wood Working	4,119	4,713	5,477	—	—	—	—	20	41
Building Construction	2,716	2,913	1,190	803	744	753	29	41	62
Masonry	—	30	25	—	—	—	—	—	—
Drafting	36	15	14	6	11	16	—	—	—
Small Boat Building	—	—	19	—	—	—	—	—	—
Mechanical Indust.	6,257	5,119	3,557	—	—	—	122	94	43
Automechanic	137	508	760	781	860	791	18	25	54
Machinist	41	323	494	—	—	7	—	20	40
Welding	—	267	385	—	—	—	—	—	—
General Metal	—	49	64	—	—	—	—	—	—
Metal Work	60	65	57	225	277	284	7	25	43
Electricity	128	305	396	433	526	503	3	45	54
Radio & T.V.	—	94	288	423	453	382	3	5	33
Indus. Tech. Training	—	—	—	98	273	229	—	—	1
Ind. Arts. Tech. Training	—	—	—	133	—	—	55	129	159
Ceramics	—	16	34	—	—	—	—	—	—
Arts & Crafts	899	595	360	189	198	193	718	569	491
Nielloware	—	24	36	—	—	—	—	—	—
Photography	79	76	65	45	34	35	1	2	—
Printing	102	101	93	49	51	51	—	2	1
Girl's Trades	5,558	7,170	7,232	—	—	—	—	—	—
Weaving	—	—	26	—	—	—	—	—	—
Cloth & Dress Making	—	—	—	336	340	305	34	10	16
Food & Nutrition	—	—	—	279	298	296	26	12	14
Tailoring	161	158	106	32	31	39	7	4	4
Secretarial Skills	673	507	800	262	248	233	13	6	5
Accounting	—	—	545	399	390	437	14	11	7
Business Administration	—	61	243	—	—	27	—	—	—
Salesman	—	—	41	35	85	97	—	—	11
Commercial Trade	5,980	4,899	2,642	—	17	—	—	—	—
Foreign Languages	511	428	317	—	—	—	—	—	—
Tech. Preparatory	111	35	132	300	—	—	—	—	—
Land Survey (Exploration)	340	283	264	69	64	77	4	4	—
Leather Work	40	66	56	—	—	—	—	—	—
Agriculture	610	813	1,244	—	—	—	300	267	166
Home Economics	76	—	49	—	—	—	—	—	—
Pipe Welding	—	—	—	—	—	6	—	—	—
Total	28,634	29,633	27,011	4,897	4,900	4,761	1,404	1,291	1,235

Source : The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1961, p. 347.

In some courses at the senior and technical level the enrollment decreased: for example, mechanical industry, building construction, masonry, arts, photography, printing, clothes and dress making, tailoring, accounting, commercial trade, foreign language, land survey and home economics.

Enrollment in vocational schools and in other types of schools.

To better understand the needs of students in vocational education, comparison of the enrollment in vocational education with that in other-types of curricula was made, as shown in, Table 42.

TABLE 42. ENROLLMENT CHANGES IN VOCATIONAL EDUCATION AND IN OTHER CURRICULA, BY LEVEL, BETWEEN 1958-1961.

Level	Vocational		Other Streams	
	Numerical	Percent	Numerical	Percent
Grades 5-6-7	- 13,085	- 97.0-	+ 58,545	+ 18.5
Grades 8-9-10	- 5,696	- 24.5	+ 69,989	+ 42.1
Grades 11-12-13	+ 5,256	+ 21.5	+ 18,963	+ 121.9
*Technical (Grades 14-15)	+ 1,592	+ 48.1	No Comparable data	
Teacher Training	+ 209	+ 20.3	+ 5,549	+ 43.9
Short Courses	+ 4,082	+ 1,218.5	No Comparable data	

* Change between 1958 and 1962.

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 348.

The above table indicates that enrollment at every level of education in non-vocational types of schooling increased during the period reported, while the enrollment in vocational schools decreased at the lower and upper levels (grades 5 through 10). Vocational education students, at the senior level, in teacher training, and in short courses increased. Short course enrollment increased 1,218.50 % between 1958-1962. It is here emphasized that a study to find out why students chose short courses should be made in order to set up a definite plan to meet the needs in vocational education.

Opportunity to enter vocational schools.

Table 43 reports the number of applicants and admissions at different vocational school levels in 1962. This provides some indication of the probability of being accepted into vocational training at various levels.

TABLE 43. NUMBER OF APPLICATIONS AND ADMISSIONS AT DIFFERENT VOCATIONAL SCHOOL LEVELS, 1962.

Types of School	Upper Level (US grades 8-9-10)		Senior Level grades (11-12-13)		Technical grades (14-15)		Teacher Training	
	App.	Adm.	App.	Adm.	App.	Adm.	App.	Adm.
Teacher Training	—	—	—	—	—	—	780	271
Technical	—	—	1696	836	7902	2005	808	140
Agriculture	343	339	504	354	433	308	96	35
Arts & Crafts	—	—	294	195	270	122	553	171
Building Construction	77	70	760	679	178	76	—	—
Mechanical Trades	10	10	2865	1140	532	28	—	—
Commercial Trades	—	—	3414	1356	—	—	—	—
Foreign Trade	—	—	417	302	—	—	—	—
Tailoring	15	14	35	33	—	—	—	—
Boys' Trades	1267	1212	3064	2633	—	—	—	—
Girls' Trades	585	512	2834	2572	—	—	—	—
Leather Work	33	31	23	23	—	—	—	—
Small Boat Building	—	—	19	19	—	—	—	—
Weaving	28	28	26	26	—	—	—	—
Nielloware	—	—	21	21	—	—	—	—
Total	2358	2216	15972	10189	9315	2539	2237	617

Source; The Joint Thai-Usom Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 351.

From the above table it could be concluded that:

1. The opportunity of entering vocational schools was greater at the upper level than at the senior level, as shown by the percentage of applicants accepted—94% and 63%, respectively. The percentage of applicants accepted at the technical level was approximately the same as that for teachers training, these figures being 28% and 27%, respectively.
2. The great differences in the size of enrollment in some courses at different levels, such as mechanical trades and building construction, gave rise to complications in providing adequate instruction and training facilities and made the prediction of enrollment difficult, if not impossible.
3. Associated with, and one cause of, the great differences in enrollment at various levels, is the fact that students came from various places with different backgrounds. After graduation many students were less capable than they should be, due to having entered vocational training at an advanced level without first having enrolled in more basic courses in their particular vocational specialty.

Table 44 gives a clearer picture of the percentage of applicants admitted into vocational schools at different levels.

TABLE 44. APPLICATION—ADMISSION RATIOS, BY LEVEL, 1960 - 62, (NUMBER ADMITTED PER 100 APPLICANTS).

Level	Year		
	1960	1961	1962
Grade 8-9-10	90	93	94
Grade 11-12-13	76	68	64
Grade 14-15	43	42	27
Teacher Training	75	27	28

Source: The Joint Thai-USOM Human Resources Study. *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 352^c

It is obvious that the percentage of applicants accepted for admission at the senior, technical, and teacher training levels decreased. This is a reflection of the fact that a student's opportunity to enter vocational schools at these levels decreased every year. In other words, students' needs for vocational education at these three levels were relatively greater than the opportunity to satisfy the needs, or aspirations.

Number of failures and drop-outs at different levels.

Tables 45 and 46 show wastage in vocational education due to a great number of failures and drop-outs.

Consideration of the information in Table 45 and 46 permits one to draw a few interesting conclusions:

1. The percentage of failures and drop-outs in vocational schools was less than in elementary and secondary schools.
2. The percentage of failures in technical level courses was higher than in vocational teacher courses in 1960-1961.
3. In building construction, boy's trades, girl's trades, agriculture, and leather work schools the percentage of failures at upper and senior levels was rather high, but the percentage of failure in 1961 was less than in 1960.

TABLE 45. NUMBER OF FAILURES AND DROP-OUTS IN VOCATIONAL EDUCATION AT DIFFERENT LEVELS,
1960—1961 FOR GRADES 8-9-10 AND 11-12-13.

	1960						1961					
	Grades 8-9-10			Grades 11-12-13			Grades 8-9-10			Grades 11-12-13		
	Total	Fail or Drop Out	%	Total	Fail or Drop Out	%	Total	Fail or Drop Out	%	Total	Fail or Drop Out	%
Technical Institute	—	—	—	2,055	452	22.0	—	—	—	1,891	506	26.8
Agriculture Coll.	—	—	—	333	49	14.9	—	—	—	411	79	19.2
Agriculture Sch.	2,472	407	16.5	277	53	18.1	2,069	202	9.8	402	26	6.5
Arts and Crafts	—	—	—	899	83	9.2	—	—	—	595	41	6.9
Building Construction	98	17	17.5	2,966	473	15.8	151	13	8.6	2,587	373	14.4
Mechanical Trades	79	6	7.6	6,097	743	12.2	80	27	33.8	4,921	507	10.3
Commercial Trades	—	—	—	5,790	641	11.1	—	—	—	4,653	617	13.3
Foreign Language	259	22	8.5	1,078	144	13.3	77	2	2.6	986	177	17.9
Tailoring	18	1	5.5	161	25	15.5	22	5	23.7	158	49	31.0
Boys' Trade Sch.	13,243	2,756	20.8	2,379	551	16.3	9,675	855	8.8	5,753	621	10.8
Girls' Trade Sch.	8,049	1,151	14.3	5,558	609	10.9	5,275	171	3.2	1,186	374	5.2
Leather Work	84	16	19.0	40	1	2.5	81	12	14.8	66	15	32.8
Small Boat Building	79	9	11.4	—	—	—	85	19	22.4	—	—	—
Weaving	78	9	11.4	—	—	—	29	1	3.5	—	—	—
Nielloware	20	9	45.0	—	—	—	17	—	0	24	5	20.8
Total	24,479	4,403	18.0	28,623	3,824	13.3	17,561	1,307	7.7	29,633	3,392	11.7

Source: Thai-Usom Human Resource Study, "Voc. Ed.", Preliminary Assessment of Education And Human Resources in Thailand 1963, p. 353-354.

TABLE 46. NUMBER OF FAILURES AND DROP-OUTS IN VOCATIONAL EDUCATION AT TECHNICAL AND TEACHER TRAINING LEVEL., 1960-1961.

Type of Course	1960						1961					
	Tech, level (Grades 14-15)			Voc. Teach. Train.			Tech. lev. (Grades 14-15)			Voc. Teach..Train.		
	Total	Fail or Drop Out	%	Total	Fail or Drop Out	%	Total	Fail or Drop Out	%	Total	Fail or Drop Out	%
Voc. Teacher Training	—	—	—	—	—	—	—	—	—	141	2	1.4
Technical Institute	4,522	591	13.1	214	11	5.1	4,552	595	13.1	220	2	0.9
Agriculture College	—	—	—	146	11	7.5	—	—	—	140	1	0.7
Agriculture School	—	—	—	204	8	3.9	—	—	—	127	1	0.8
Arts and Crafts	189	1	0.53	718	18	2.5	198	1	0.5	569	15	2.6
Building Construction	186	15	8.1	—	—	—	150	35	23.4	—	—	—
Mechanical Trades	—	—	—	122	3	2.62	—	—	—	94	3	3.2
Total	4,897	607	12.4	1,404	51	3.63	4,900	631	12.9	1,291	24	1.8

Source : Thai-Usom Human Resources Study, *Preliminary Assessment of Education And Human Resources in Thailand*, 1963, p. 353-4.

The employment opportunities of graduates.

This particular problem should be given special attention because it is severe compared to that of graduates of elementary and secondary education. In 1962 the Department of Public Welfare reported that 69% of those graduated from vocational school were employed and 31% were unemployed. The results of the follow-up study of graduates from the Technical Institute are reported in Table 47.

TABLE 47. SOURCES OF EMPLOYMENT OF STUDENTS GRADUATED FROM THE TECHNICAL INSTITUTE IN 1958-62.

Type of Employment	No. of Response	Percentage
Goverement Service	2,411	84
Private Job	456	9
Advaneed Study	209	7
Total	2,876	100

Source: The Joint Thai-Usom Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 356-8.

It was found that of 4,823 questionnaires sent out for the above study only 2,876 were returned, representing a 60% response. The employment status of the 40% who did not answer the questionnaires was not known. Therefore, this percentage (i.e., 40%) could be taken as the highest index of unemployment, although it is unlikely to amount to this much.

Qualifications of teachers in vocatiocal schools.

Taking the curricula of vocational education and the ages of students into account, criteria for the qualification of teachers might be as follows:

- a. Teachers with at least the secondary teachers' training certificate or its equivalent are qualified to teach academic subjects such as Thai, social studies, and mathematics.
- b. Teachers with at least the technical diploma are qualified to teach professional subjects.

For convenience of classification, the actual qualifications of vocational teachers were divided into seven categories, as listed in Table 48, which shows that 15% of all vocational education teachers hold a bachelor's degree, which is higher than the standard of the Department of Secondary Education. According to the afroementioned criteria, 55% of all vocational teachers were considered qualified and the other 45% needed improvement. To show some details of the qualifications of teacher in the Department of Vocational Education, Table 49 is presented.

TABLE 48. THE QUALIFICATION OF TEACHERS UNDER THE DEPARTMENT OF VOCATIONAL EDUCATION, 1962.

Qualification	No. of teachers	%
Bachelor's degree or higher	701	15.10
Secondary teachers' Cert. or its equivalent	1,007	21.55
Higher Vocational Cert. or its equivalent	836	17.90
Elementary teachers' Cert. or its equivalent	102	2.14
Primary teachers' Cert. (Paw)	403	8.62
Upper vocational Cert. or less	1,157	24.76
Other	464	9.93
Total	4,670	100.00

TABLE 49. VOCATIONAL TEACHER QUALIFICATIONS AND TYPES OF SCHOOL IN WHICH EMPLOYED, 1962.

Types of School	Degree	Teacher Train. Cert.										No Teach. Cert.								
		Foreign Degree	Bachelor in Education	Bachelor Degree and Teach. Cert.	Bachelor Degree	Sec. Teach. Train. Certificate	Post Primary Teacher Training Cert.	Pri-Teach. Train. Cert.	Sec. Voc. Teach. Cert.	Post Pri-Voc. Teach. Cert.	Pri-Voc. Teach. Cert.	Technical & Teach. Cert.	Technical Dip.	University Dip.	Physical Ed.	Higher-Voc. Cert.	Upper Voc. Cert.	Lower Voc. Cert.	Unclassified	Total
Trade School	Boy	1	19	1	5	37	105	30	29	359	144	81	4	24	215	375	59	121	1607	
	Girl	1	93	16	6	58	43	23	95	186	19	184	27	2	10	214	148	3	30	1150
Commercial & Industrial		27	71	85	76	54	8	2	42	17	20	111	83	6	23	55	25	166	874	
Technical Institute and Teacher Training		56	53	1	108	12	1	—	—	—	—	185	—	—	—	—	—	127	541	
Agriculture		12	12	1	52	45	17	8	96	94	1	1	10	4	10	13	29	1	13	417
Short-Course		2	—	2	4	—	1	—	3	6	—	18	17	1	—	8	5	7	7	81
Totals		98	248	104	251	201	174	63	265	662	39	457	403	17	67	505	582	70	464	4670
Type totals		701 (15%)				1861 (40%)				2108 (45%)										

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand, 1963*, p. 366.

Budget for vocational education.

The Ministry of Educational allocated resources for the development of vocational education as shown in the Table 50.

TABLE 50. BUDGET ALLOWANCE FOR VOCATIONAL EDUCATION COMPARED WITH THE MINISTRY OF EDUCATION'S ALLOCATION, 1954-1962.

Year	Ministry Total bahts	Voc. Education bahts	% for Voc. Ed.
1954	300,987,713	34,970,224	11.62
1955	250,979,271	30,674,974	12.22
1956	268,719,768	26,584,084	9.89
1957	267,881,590	26,251,314	9.81
1958	442,883,643	55,591,775	12.55
1959	1,267,742,943	94,973,859	7.49
1960	1,236,365,741	89,986,795	7.27
1961	1,026,155,910	69,769,918	6.79
1962	1,468,425,000	109,982,100	7.49

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 360.

The Department of vocational Education expended its funds for various purposes as shown in Table 51.

TABLE 51. PATTERN OF EXPENDITURES IN THE DEPARTMENT OF VOCATIONAL EDUCATION, 1961-62.

Type of Expenditure	Expenses (in. bahts)		% of Total Expenditure	
	1961	1962	1961	1962
Wages & Salaries	44,176,950	64,933,500	63.30	59.00
Janitor & Driver Wages	2,520,940	3,972,800	3.62	3.64
Remuneration	6,156,935	6,549,300	8.84	5.96
Ordinary Expenses	1,036,357	1,769,100	1.48	1.62
Materials & Supplies	957,920	2,075,100	1.37	1.88
Equipment	1,916,870	7,171,000	2.74	6.52
Sites and Buildings	7,720,000	16,106,600	11.20	14.65
Subsidy	5,099,321	7,404,200	7.29	6.73
Other Expenses	184,615	—	0.26	—

Source. The Joint Thai-USOM Human Resources Study; *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 360-1.

The above table shows that the pattern of expenditure in the Departments of Vocational Education is similar to that of the Departments of Elementary and Secondary Education. It should be noted that 63-67% of the budget was spent on teachers' salaries and janitors' wages, but only 4-8% was used for educational materials.

Investment in vocational education.

Tables 52 and 53 show the amount of the national budget allocated for operating expenses and for capital expenses in different types of vocational schools during the years 1961-63 with computations of per-pupil costs.

TABLE 52. PER-PUPIL OPERATING COSTS BY TYPES OF VOCATIONAL SCHOOLS, 1961-1963.

Types of School	Total National Budget for operating expense (in bahts).	Number of Students	Cost per Student (in bahts)	Remarks
Trade of School				
Year 1961	31,257,076	28,658	1,090	1. National budget
1962	50,297,300	22,553	2,215	in 1961 allotted
1963	55,246,900	—	—	for Jan. 1 to Sep. 30. (9 months only) and the
Business & Industrial				
Year 1961	16,054,814	15,498	1,035	budget for 1962
1962	23,351,300	11,712	1,990	covers from
1963	22,344,900	—	—	Oct. 1 to Sept. 30.
Agriculture				
Year 1961	9,688,244	3,176	3,090	2: The Number of
1962	16,187,200	2,962	5,450	Students in 1963
1963	20,856,600	—	—	is not yet available
Technical				
Year 1961	9,201,325	6,804	1,350	
1962	14,244,300	6,849	2,080	
1963	16,655,600	—	—	
Short courses				
Year 1961	1,839,635	1,568	1,170	
1962	3,085,700	4,064	760	
1963	2,954,800	—	—	

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 364-5.

TABLE 53. PER-PUPIL CAPITAL COSTS BY TYPES OF VOCATIONAL SCHOOLS,
1961-1962.

Types of School	Total National Budget for Capital Expense	Number of Students	Baht per Student
Trade School			
Year 1961	2,850,000	28,658	100
1962	8,486,000	22,553	377
1963	10,800,400	—	—
Business & Industrial			
Year 1961	2,771,990	15,498	179
1962	6,163,000	11,712	526
1963	5,974,800	—	—
Agriculture			
Year 1961	2,536,200	3,176	800
1962	5,883,800	2,962	1,965
1963	8,672,900	—	—
Technical			
Year 1961	1,337,300	6,804	199
1962	2,315,400	6,849	338
1963	4,497,400	—	—
Short Course			
Year 1961	141,380	1,568	90
1962	303,800	4,064	75
1963	198,500	—	—

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 364-5.

Figures indicated that the operating and capital costs per student increased between 1961 and 1962 in the agricultural, business and industrial schools, trade school, and Technical Institute. The highest per-pupil cost was evident in the agricultural schools.

One caution needs to be observed in interpreting costs and expenditures of vocational schools. The national vocational education budget is not the only source of income of the vocational schools. They also derived support from donations, student fees, sale of school products, and technical assistance from other nations. These sources are considered to be irregular support, and are not included in the above tables.

TEACHERS EDUCATION

At present there are many institutions other than those under the Department of Teacher Training which contribute to the supply of teachers, such as Chulalongkorn University, Vocational Teacher Training School, Technical Institute, Arts and Crafts School, and Physical Education Institute. Table 54, 55, and 56 give some information concerning the organization of the teachers education system.

TABLE 54. TYPES OF TEACHER TRAINING ESTABLISHMENTS PRODUCING TEACHERS WITH CERTIFICATES OF EDUCATION ON THE PAW KAW SAW LEVEL.

Establishment	Entrance requirement	Course duration	Qualification level of graduates.
1. Teacher Traning Schools or Colleges under the Dept. of Teacher Training.	Lower Mathayom Suksa (M.S. 3) (U.S. Grade 10)	2 years	Certificate of Education (Paw Kaw Saw)
2. Physical Education Teacher Training School Under the Physical Ed. Dept.	Lower Mathayom Suksa (M.S. 3) (Grade 10)	2 year	Certificate of Education (Phy. Ed.)
3. Arts and Crafts School under the Dept. of Vocational Education.	Lower Mathayom Suksa (grade 10)	3 year	Certificate in Arts and Crafts (Paw Kaw Saw)
4. Chombung Village Institute Under the Dept. of Teacher. Training.	Upper Prathom (grade 7)	5 year	Certificate of Education

TABLE 55. TEACHER TRAINING ESTABLISHMENTS PRODUCING TEACHERS WITH HIGHER CERTIFICATE OR DIPLOMAS OF EDUCATION.

Establishment	Entrance Requirement	Course Duration	Qualification level of graduates.
1. Teachers' Training College under the Teacher Training	Cert. of Ed. or its equivalent	2 yrs.	Higher Certificate in Education
2. College of Education Under the Dept. of Teacher Training	Cert. of Ed. or its equivalent	2 yrs.	Diploma of Education
3. Physical Education College under the Dept. of Physical Education	Cert. of Ed. or its equivalent	2 yrs.	Higher Certificate of Education (Phy. Ed.)
4. The Department of Vocational Education's Teacher Training College	Higher Vocational Education Certificate	2 yrs.	Secondary Vocational Teacher Cert.
5. The Dept. of Vocational Education	Higher Voc. Ed. Cert. or its equivalent	1 yr.	Secondary Industrial Arts Teacher Cert.
6. The Department of Vocational Education's Arts & Craft School	Cert. in Arts and Crafts.	2 yrs.	Secondary Arts and Crafts Teachers' Certificate
7. The Dept. of Voc. Education's Chiengmai Agricultural College	Higher Voc. Education or its equivalent	2 yrs.	Secondary Agricultural Teacher Cert.
8. Chulalongkorn University, Faculty of Education	Completion of Second year in any Faculty of a Chulalongkorn University Degree Program.	1 yr.	Diploma in Education

TABLE 56. INSTITUTIONS PRODUCING DEGREE TEACHERS.

Establishment	Entrance Requirement	Courses Duration	Qualification level of graduates
1. The Department of Teachers Training College of Education	a. Certificate of Education or its equivalent	4 yrs.	Bachelor of Education
	b. Diploma of Ed. or its equivalent	2 yrs.	Bachelor of Education
	c. B. Ed. (with 2.5 grade point average)	2 yrs.	M. Ed.
2. Chulalongkorn University's Faculty of Education	a. Upper Secondary school or its equivalent	4 yrs.	B. Ed.
	b. higher Certificate of Education	2½ yrs.	B. Ed.
	c. Bachelor's Degree or completion of the third year in any faculty	2 yrs.	B. Ed.
	d. Diplo. of Ed.	2½ yrs.	B. Ed.
	e. B. Ed.	2 yrs.	M. Ed.

The need for qualified teachers.

The Department of Teacher Training aims not only to educate more teachers to meet the increasing needs of the schools of Thailand but also aims to improve the qualifications of employed teachers. The number of unqualified teachers is reported in Table 57.

TABLE 57. NUMBER OF QUALIFIED AND UNQUALIFIED TEACHERS 1957-1963.

Year	Total Number of Teachers	Number of qualified Teachers	Number of Unqualified Teachers
1957	111,263	50,708	60,555
1958	119,405	54,887	64,518
1959	131,006	63,712	67,294
1960	136,576	68,720	67,851
1961	137,748	88,003	49,745
1962	143,827	96,476	47,351
1963	150,115	100,935	49,180

Source: Department of Educational Techniques, The Ministry of Education, *Educational statistics*, 1954 - 60. 1961, 1963.

TABLE 58. PREDICTED NUMBER OF TEACHERS AND TEACHER TRAINEES 1961-1980 (B.E. 2504-2523).

A.D.	1	2	3	4	5	6	7	8	9	10	11
	Population Millions	School Population	Percentage (School Population to Total population%)	Teachers Required 1:30	Annual. Increase	Teachers Loss 2% - 3%	New Teachers Required (5) + (6)	Students in Training Required (7) x 2.5	Max. No. Of Places at Training Colleges	New Teachers Produced (9) ÷ 2.5	Supply For Emergency Programme (7) — 10
1961	27.4	4,360,485	15.9	145,353	—	—	—	—	—	—	—
1962	28.3	4,560,000	16.1	152,003	6,550	3,040	9,690	24,225	16,248	6,266	3,424
1963	29.2	4,739,000	16.2	157,970	5,967	3,949	9,916	24,790	16,500	6,499	3,417
1964	30.1	4,938,000	16.4	164,603	6,633	4,938	11,571	28,928	18,000	6,600	4,971
1965	31.0	5,146,000	16.6	171,533	6,930	5,128	12,058	30,145	22,000	8,800	3,258
1966	31.9	5,349,000	16.8	178,304	7,351	5,349	12,700	31,750	26,000	10,400	2,300
1967	32.8	5,599,500	17.1	186,654	8,650	5,600	14,250	35,625	30,000	12,000	2,250
1968	33.8	5,860,000	17.3	195,337	8,683	5,860	14,543	36,356	34,000	13,600	1,143
1969	34.8	6,172,000	17.7	205,737	10,400	6,172	16,572	41,430	38,000	15,200	1,372
1970	35.9	6,524,000	18.2	217,471	11,734	6,524	18,258	45,646	42,000	16,800	1,458
1971	36.96	6,874,560	18.6	229,152	11,681	6,874	18,555	46,388	46,000	18,400	111
1972	38.05	7,229,500	19.0	240,983	11,831	7,229	19,060	47,650	50,000	20,000	—
1973	39.17	7,598,980	19.4	253,299	12,316	7,599	19,915	49,788	52,000	20,800	—
1974	40.32	7,983,360	19.8	266,112	12,813	7,983	20,796	51,990	54,000	21,600	—
1975	41.51	8,385,020	20.2	279,501	13,389	8,385	21,774	54,435	56,000	22,400	—
1976	42.73	8,802,380	20.6	293,413	13,912	8,802	22,714	56,785	58,000	23,200	—
1977	43.99	9,237,900	21.0	307,930	14,517	9,238	23,755	59,388	60,000	24,000	—
1978	45.29	9,692,060	21.4	323,069	15,139	9,692	24,813	62,078	62,000	24,800	—
1979	46.63	10,165,340	21.8	338,845	15,776	10,165	25,941	64,853	64,000	25,600	—
1980	48.01	10,658,220	22.2	355,274	16,429	10,658	26,087	65,218	66,000	26,400	—

Source: The Joint Thai-Usom Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, 1963, p. 292.

The above table shows that the number of unqualified teachers in 1957 was 51% of all teachers. The percentage of unqualified teachers gradually decreased to 33% in 1963. The Department of teacher Training should find some means of further reducing the extent of this problem.

Table 58 gives a projection of the number of teachers needed to meet the demands of school between 1961-1980. It indicates that the number of teachers produced has not met the needs constituted by the increasing number of school children every year. The Department of Teacher Training is the primary organization responsible for the preparation of teachers. It seems evident that this Department must take steps to increase the number of teachers (and school facilities as well), for otherwise present and future educational needs will be unmet.

Table 59 shows the capacity of the Department of Teacher Training to educate persons for teaching responsibilities in the period 1958-1964.

TABLE 59: THE NUMBER OF TEACHERS TRAINED BY THE DEPARTMENT OF TEACHERS' TRAINING BY LEVEL OF QUALIFICATION, 1958 - 1964.

Year	Masters Degree	Bachelors Degree	Higher Cert. of Ed.	Lower Cert. of Ed.	Total
1958	—	334	955	4228	5517
1959	—	467	1024	4504	5995
1960	—	453	1584	5712	7749
1961	15	468	1350	4758	6591
1962	14	365	1544	5582	7505
1963	34	456	1478	5170	7147
*1964	42	530	1809	5713	8094

* Reported by the Department of Teacher Training.

** Estimated number of graduates who assumed Teaching responsibilities directly following graduation.

Source: Department of Educational Techniques, the Ministry of Educational, *Educaional Statistics*, 1954-60, 1961-63.

The figures shown in column 7 of Table 58 for 1964 indicate that the number of additional teachers required was 11,571; but the number of teachers actually produced by the Department of Teacher Training was 8094, as shown in column 6 of Table 59. Furthermore, among this number of teachers graduated about one-third continued their studies at higher levels. Thus in 1963 the number of teachers estimated to enter the profession was 4932, and in 1964 it was 5396.

But institutions other than those under the control of the Department of Teacher Training also are involved in training student teachers, as noted in the following statistics for 1964:

1. The Department of Vocational Education produced about 432 teachers.
2. The Department of Physical Education, about 250 teachers.
3. The Faculty of Education, Chulalongkorn University, about 200 teachers.

This makes a total of 837 teachers. Therefore, there will be about $5396 + 837 = 6233$

teachers entering the profession in 1965. Considering column 10 of Table 58, it was estimated that the number of teachers produced would be 6,600. Therefore, the actual number of teachers produced in 1965 was slightly less than expected. According to column 7 of Table 58 the number of new teachers required to meet the demand constituted by the increasing number of children in 1964 was 11,571; hence the size of the teachers shortage would be 5,338.

Opportunity to enter teacher training institutions.

Figures in Table 60 demonstrate the chance applicants have of entering teacher training institutions at the lower certificate level.

TABLE 60. NUMBER OF APPLICATIONS AND ADMISSIONS TO TEACHER TRAINING INSTITUTIONS AT THE LEVEL OF LOWER CERTIFICATE OF EDUCATION UNDER THE DEPARTMENT OF TEACHER TRAINING, 1962-64.

Year	Bangkok-Dhonburi			Provincial			Total		
	Applic.	Ad- miss.	% Ad- mitted	Applic.	Ad- miss.	% Ad- mitted	Applic.	Ad- miss.	% Ad- mitted
1962	6,571	1,806	27.48	19,829	3,744	18.88	26,400	5,550	21.02
1963	6,208	1,573	25.34	19,985	4,961	24.82	26,193	6,534	24.94
1964	7,717	2,211	28.65	20,719	4,904	23.67	28,436	7,115	25.03

Source: Teacher Training Department, The Ministry of Education.

The above table points out that a great number of students between 16 and 19 years of age wish to enter the teaching profession. Thus it is evident that the possibility of expanding the supply of teachers is limited solely by lack of funds, facilities, and other resources needed for training these personnel.

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

Summary

Overview of the Thai Education System.

Many things must be taken into consideration in order to understand the Thai educational system, such as the National scheme of Education, budgets, number of schools, number of classrooms, number of teachers and number of school age children. According to the 1960 National scheme of Education, the Thai educational system is divided into four main levels, kindergarten, elementary, secondary and higher education. Each level has its own specific objectives; for example, kindergarten education is provided for boys and girls to prepare them for elementary education. And elementary education aims to promote the development of children through acquisition of basic skills and knowledge so that they will be ready to further their education at secondary and higher levels.

In 1962, statistics showed that throughout the nation there were 4.6 million school age children, 3.6 million of whom were in the elementary school level. The number of schools were approximately 28,000, the number of classrooms 150,000 and the number of teachers 140,000. The number of elementary school children has increased approximately 3 - 4% each year. During the years 1959-1963 the allocation of the national budget for education at the elementary, secondary and higher education levels as expressed in approximate proportions was 71 : 17 : 12. But in the 1964-66 period the budget allocation to higher education was disproportionately large because two universities were being established.

Statements of the problems and purposes of this study.

The main purpose of this study is to investigate the educational needs of Thai children and youth at each level, and major division, namely, precompulsory, elementary, secondary, vocational education, and teachers education.

Methods and limitations of this study.

The main methods used to carry on this study are as follow:

1. Reviewing and gathering all related data from the available literature.
2. Interviewing authorities in the field and in governmental organizations involved.

The study was confined to the needs for education of Thai children between pre-compulsory school age and the age of 19, excluding university education.

Findings.

Analysis of the data in the study indicates the following important pertinent information:

1. Pre-compulsory education.

1.1 There are more children in private schools than in government schools. Statistics show that 83 per cent of all kinder garten school children are in the former.

1.2 In 1953 number of all pre-compulsory school children enrolled was about one per cent of all school-age children enrolled.

1.3 The number of pre-compulsory school children attending government schools tended to increase during 1954-1959 but to decrease during 1960-1963. This might be due to the fact that the Department of Elementary Education aimed to improve education at the elementary level more than at the pre-compulsory level, or the Government encouraged private schools to provide the education for a larger share of the pre-compulsory school children.

1.4 Statistics also show that the need for education at the pre-compulsory level was very small because of the small increase in the number of students.

2. Elementary Education.

2.1 The compulsory education law was about 96 per cent effective for grade 1 with respect to attendance of children reported as eligible. The other four per cent includes those who had been declared exempted, those who report and those who refused to attend school. It is necessary to find means of helping these children.

2.2 The rate of increase of students at elementary school level was three to four per cent, which was slightly higher than that of the population. This might be due to the fact that at present people have more interest in education than they used to.

2.3 In 1962 the number of elementary school children was about 16 per cent of the total population.

2.4 The proportion of the general population comprised by the student population at elementary school level was higher in Thailand than in the neighboring countries such as the Philippines, Vietnam, Laos, Cambodia and Malaysia.

2.5 Because of the steady increase of student population, many problems have arisen, for example, the shortage of school buildings, teachers and teaching-learning materials. Thus each teacher has had to teach more than 35 students in each class.

2.6 The problem of over-populated classrooms should be taken into consideration since it affects the quality of education. There has been a tendency of steady increase in the number of students per classroom. For example, in 1959 forty per cent of the grade 1 students had to attend classes consisting of at least 40 students per classroom. In 1960 the percentage of classrooms having 40 students increased to 47.2 per cent, and 2.3 per cent of the grade 1 classroom had more than 90 students each. If all students in elementary school level were considered, it was found that 50 per cent of all classrooms have 50 students each.

2.7 The increase of students in first grade classes between 1959 and 1961 from an average of 36 to 44 students per classroom might be due principally to an actual increase of the student population or to limited classroom space or to an increased percentage of retentions at grade level.

2.8 Projections of the student population reveal that the number of students in elementary school increases by about 200,000 annually. If 35 students for each classroom per teacher is taken as a standard, it would be necessary to increase the number of classroom at the rate of 6,000 to 7,000 per year and to increase the number of teachers at least 7,000 per year to compensate for those who retire, transfer, and die.

2.9 The number of those students who were exempted from compulsory education in 1962 was about 30,000, the majority of whom were exempted because they live beyond two kilometres from school. Thus lack of transportation is one of the major obstacles to regular attendance in elementary school.

2.10 In 1962 children who were eligible but did not attend first grade amounted to 3% of those registered; five years before this about 3%-6% of those eligible did not attend the first grade.

2.11 Other factors such as children's illness and the necessity of helping their parents precluded the enrollment of some children.

2.12 In 1962 about 45% of all school buildings were of permanent construction which would last about 20 years, 13% would last about 10 years, 16% would last about five years, and the remaining 26% were not fit to use as school buildings because they were constructed with poor materials which would last only about six months to a year.

2.13 About one-fourth of all elementary schools occupied buildings on temple grounds which were not fit to use as classrooms. This should be improved immediately.

2.14 The ratio of men to women teachers in elementary schools was 3:1.

2.15 In 1961 about 41% of elementary school teachers were without teachers' certificate, 7% of whom had completed only their elementary education, 27% of whom had an education through secondary school, and the remainder had other qualifications.

2.16 Elementary school teachers could be divided into three groups according to level of qualification. Those who qualified with a bachelor's degree amounted to less than 0.5%, those with a diploma or its equivalent amounted to about 2%, and those with a teacher's certificate below diploma level amounted to about 56%.

2.17 in 1957 the number of student repeaters in grade 1 was about 35% of all grade 1 students and in 1962 the number of repeaters decreased slightly to 32%.

2.18 The failure of elementary school students was caused by the following factors: (1) About 20% of all repeaters failed because of absence from classes or irregular attendance due to inadequate transportation or being transferred from place to place with their parents; (2) About 19% of all repeaters failed because of poor health or sickness, and (3) the rest failed because of low achievement, language difficulties and problems of social and emotional adjustment.

(Some students adjudged to be failures may have been misclassified due to sole reliance on written examination as the criterion for success).

2.19 A study of two groups of students who entered the first grade in different years (1954 and 1957) revealed that for every hundred students entering first grade only eight or nine students succeeded in moving to the 7th grade.

2.20 The same study revealed that the percentage of children who remained in school through fourth grade was greater for the group entering in 1957 than for that entering in 1954; but there was no important difference between the groups as to the percentage remaining in school during grades 5 to 7.

2.21 A survey of the education of enlisted Navy personnel indicated that 4% of those who had completed their elementary education could not read or write. This figure seems to indicate that some children who have completed their elementary education revert to illiteracy several years after having left school.

2.22 An analysis of the budget in the Department of Elementary Education in 1962 shows that 90% of the budget was spent on teachers' salaries and the other 10% was left for the expenses of building and improving school rooms and providing teaching materials. The problems of school buildings and teaching materials shortages still remain.

2.23 It has been established from the current rate of the increase of elementary school students, the current rate of increase of the general population, current education policies and other important factors that the average number of students in grades 1-4 will increase by 142,000 annually. If compulsory education were extended to the seventh grade throughout the nation, the size of the student population of grades 1-7 would increase about 200,000 each year.

The 1962 budget of the Department of Elementary Education reveals that the annual cost per student is approximately \$ 20. If elementary education were made compulsory through seventh grade, the budget of the Department of Elementary Education would have to be increased annually by at least ten per cent of the preceding year.

3. Secondary education.

Before 1960 the secondary schools in Thailand were organized on a 3-3-2 grade system beyond the fourth grade of the elementary school level. Nowadays it organized as 3-2 grade system beyond the seventh grade of the elementary school level. Analysis of available data on secondary level education reveals the following facts:

3.1 In 1962 the secondary school student population was 2.33 per cent of the total Thai population.

3.2 From 1957 to 1962 the increase in the number of secondary school students was approximately 30,000 annually.

3.3 The number of secondary school students in government schools at the lower level (grades 8-9) was almost equal to the number of students at the same level in private secondary schools; but at the higher level (grades 11-12) the number of those in government schools was lower than in private schools.

3.4 The average number of students per classroom in the lower secondary school level of government schools was greater than that in private school. This might have been due to the students preferring to study in government schools because the cost of education in such schools is lower than in private ones.

3.5 The average number of students per classroom in the upper secondary school level of private schools was greater than that in the government schools. This might be due to the fact that government secondary schools must limit their enrollment and thus cannot admit a great number of students. So they had to be enrolled in the private schools.

3.6 One-third of all secondary school students were in schools located in the Bangkok-Dhonburi area, and the remaining two-thirds were distributed in the other 69 provinces. Thus density of the student population in Bangkok-Dhonburi was greater than that in other provinces.

3.7 There were more female than male teachers at the secondary school level.

3.8 About three-fourths of all secondary school teachers were qualified. Most of those considered unqualified were from the provincial schools outside the Bangkok-Dhonburi area.

3.9 There were more female than male teachers in Bangkok-Dhonburi, but in other provinces outside the two cities there were more male teachers than female.

3.10 In the Bangkok-Dhonburi area there was 97 students per teacher with a degree, or nine teachers with a degree per school. But in the other provinces outside the two cities there were 1965 students per teacher with a degree, or two teachers with a degree per school. This shows that the quality of the teaching force in the Bangkok-Dhonburi area with respect to the number of teachers possessing degrees was higher than that of other areas.

3.11 The qualifications of teachers in the private secondary schools were lower than those in the government schools. The qualifications of about nine-tenths of all teachers in private schools needed to be improved.

3.12 Time allotment per week for sciences according to the 1960 secondary school curriculum in Thailand was slightly lower than that in some other Asian countries, but for other subjects the time allotments were almost the same.

3.13 About ten per cent of the students majoring in science changed their major to humanities when they went on to further study at the higher levels.

3.14 In general, from 1953 to 1962 the increase in the number of secondary school graduates was noticeable:

3.15 The variation of the percentage of those who were successful of the twelfth grade students majoring in science was greater than that of those majoring in arts.

3.16 The percentage of twelfth grade students in government secondary schools who passed the final year examination was higher than that in the private schools.

3.17 Of every hundred students entering the eighth grade, about 82 to 83 students succeeded in moving up to the tenth grade, and only 15 to 16 students succeeded in moving up to grade 12. It might be concluded that only one out of every six students entering grade 8 succeeded in moving up to grade 12.

3.18 The number of applicants for further study in the five universities has increased every year. This makes competition for university education much higher; for example, in 1962 about 20% of all applicants could be admitted, and in 1963 only 18% were admitted.

3.19 Analysis of the budget of the Department of Secondary Education in 1962 shows that almost 60 per cent of the budget was spent on salaries, about 12-13 per cent was spent for building and improving school rooms and providing for teaching materials, and the other 27 per cent was left for subsidizing private schools.

3.20 The 1962 budget of the Department of Secondary Education reveals that the annual cost per student was approximately \$45 for students in government schools and about \$16 for those in private schools.

3.21 The projection of the secondary school population for the next ten years reveals that the number of students will increase by approximately 30,000 each year

4. Vocational education.

Vocational schools under the Department of Vocational Education were studied according to the several levels of education represented:

- a. short course program,
- b. lower level (grades 5-6-7) which discontinued in 1963,
- c. upper level (grade 8-9-10),
- d. Senior level (grade 11-12-13), and
- e. technical level (grades 14-15).

The Department of Vocational Education, Ministry of Education, is responsible not only for training youths in occupational skills to ensure them a productive means of livelihood in accordance with national policies and the National Scheme of Education, but it plays an important role in preparing vocational education teachers.

Information revealed from an analysis of the data on this topic can be summarized as follows:

4.1 During 1959-1962 a trend of decreasing total vocational school enrollment was evident.

4.2 When a closer examination of each level was made, it was seen that the enrollment in technical level vocational education and in vocational teachers' education increased slightly while the enrollment in short courses increased to a greater extent. In senior level courses the enrollment was practically unchanged. It might be concluded that during 1959-1962 the greatest number of students wanted to study in vocational short courses and the second highest number choose senior level courses and vocational teachers' education.

4.3 In 1962 the number of students in vocational schools under the Department of Vocational Education was 48,140 as compared to 51,009 students in private vocational schools.

4.4 Course enrollments in wood-working, automechanics, mechanics, electricity, radio and television, industrial arts [teachers, training, business administration, girls' trades, and agriculture decreased at the lower level and increased at the upper level. At the senior and

technical levels; the trend of decreasing enrollments was evident in these courses: mechanical industry, building construction, masonry, arts and crafts, photography, printing, clothes and dress making, tailoring, accounting, commercial trade, foreign languages, land survey, and home economics.

4.5 The competition for obtaining vocational education at the senior and technical level was greater than at the lower level. This is because there was an additional number of students from the general stream of the secondary schools who applied for enrollment in the senior and technical level vocational schools, thereby increasing the total number of applicants.

4.6 The failure and drop-out rate in the vocational schools was lower than in the elementary and secondary schools. But the annual cost per student in the vocational schools was much higher than that in the elementary and secondary schools, and thus the total cost of the waste of resources due to failures and drop-outs might be higher in the former than in the latter.

4.7 Most vocational school graduates were employed in government service. There were small number who worked in private business or who furthered their education at a higher level.

4.8 In regard to the qualifications of teachers, one-half of all the vocational school teachers were in need of improvement.

4.9 Analysis of the budget of the Department of Vocational Education in 1962 shows that 65 % of the budget was spent on teachers' salaries, 25 % was spent on sites, buildings, materials, supplies and equipment, and the other 10 % was left for remuneration and subsidy.

4.10 The 1961-1962 budget of the Department of Vocational Education revealed that the annual expenditure per student in agricultural courses was higher than that in other courses of study.

5. Teachers education.

The Department of Teacher Training is responsible for the preparation of teachers to meet the needs of the country. But some other institutions which are not under this Department are also helping in this respect.

The system for education of teachers in Thailand has been organized in the following manner:

a. Candidates for the Certificate of Education must have graduated from grade 10 (Maw Saw 3), and the course duration is two years.

b. Candidates for the Higher Certificate of Education must hold the Certificate of Education or its equivalent, or have graduated from grade 12 (Maw Saw 5). The course duration is two years.

c. Candidates for the Bachelor's Degree must hold the Higher Certificate of Education or its equivalent, in which case the course duration is two years; or they must have graduated from grade 12 or have received the Certificate of Education, in which case the course duration is four years.

d. Candidates for the Master's Degree must have the Bachelor's degree, and the course duration is two years.

An analysis of the data regarding teacher training reveals these points of information:

5.1 In 1963 there were 49,180 unqualified teachers, amounting to 33% of all teachers in the nation. The Department of Teacher Training is responsible for advancing their education.

5.2 The program of preparation of teachers which is the responsibility of the Department of Teacher Training focuses on three objectives: (1) To prepare enough teachers to meet the increasing need every year; (2) To prepare teachers to replace those who transfer, retire or die, which amounts annually to 2% - 3% of all teachers in the country; and (3) To upgrade the qualifications of all teachers through in-service training and an independent study program.

5.3 At present, teacher training institutions have not succeeded in producing enough teachers. For instance, in 1964 they produced only 73% of what is needed.

5.4 There are 27 teachers' training institutions under the Department of Teachers Training. During 1960-1964 they trained 7,000-7,500 teachers annually, but only 5,000-6,000 teachers entered the teaching profession.

5.5 It had been estimated that the production of teachers in 1964 would be 6,600 but all teacher institutions actually trained only about 6,233 teachers according to the most recent statistics; thus this would be about 367 teachers less than projected.

5.6 The number of additional teachers needed for the year 1964 was 11,571. But it has been determined that the number of teachers produced was:

- (1) 5,396 from the Department of Teachers Training
- (2) 432 from the Department of Vocational Education
- (3) 205 from the Department of Physical Education
- and (4) 200 from the Faculty of Education, Chulalongkorn University.

The total number prepared to teach was 6,233, and therefore in 1965 the size of the teachers shortage would be 5,338.

5.7 During the years 1961-1964 the number of applicants for admission to the teacher training institutions for a lower certificate ranged between 20,000 and 30,000 students per year, but the number accepted was from 6,500 to 7,000 students annually. It is evident that the supply of candidates for teacher training is abundant; thus the Department of Teacher Training could increase the number of students in training simply by adjusting the quota of those accepted, whenever this is feasible.

Recommendations.

On the basis of the conclusions resulting from this study, the following recommendations are made:

1. Kindergarten and pre-compulsory education.

1.1 The problems and needs of children with respect to kindergarten and pre-compulsory education are not urgent at present but the continually changing social structure during the

development of the country makes the problems of pre-compulsory education assume more importance. For example, children are left at home when both parents go out to work. The Ministry of Education should cooperate with other organizations in providing nursery schools, particularly in big cities, to help parents with their young children.

1.2 In the rural communities the Ministry of Education could reduce its expenditures for this category of education by encouraging private associations and charitable organizations to assist in providing teachers and teaching materials. It is hoped that the increase of nursery schools would reduce the percentage of failures in grade 1. Thus, the budget could be reduced and the relationship between schools and communities could be promoted at the same time.

1.3 Teachers for kindergarten and pre-compulsory schools should have special training for their jobs.

2. Elementary Education.

2.1 It is suggested that students who were not registered for school enrollment or who were exempted from attendance under the provisions of the compulsory education law should be helped by improving mass communications and by providing education for adults.

2.2 To meet the needs posed by the growth of the student population, it is recommended that the number of classrooms for grade 1 should be increased at least 6,000 to 7,000 per year and that the number of teachers be increased about 7,000 each year.

2.3 Health services provided to elementary school children should be improved in cooperation with the Ministry of Health.

2.4 Guidance services should be initiated to help those who will be completing grade 7 to decide upon their future educational and/or vocational plans, in accordance with the philosophy embodied in the National Scheme of Education.

2.5 The budget for elementary education should be increased annually at least about 10 per cent of the proceeding year's amount.

3. Secondary Education.

3.1 The number of students graduated from grade 7 who wish to continue their education in secondary schools increases every year, but they have very little chance of continuing their education. These children should be helped by increasing the number of classrooms available in the government secondary schools or by having the Government help private schools through providing teachers, teaching materials or school buildings, rather than providing monetary support.

3.2 Since teachers in secondary schools in the provincial areas are not as well qualified as those in the Bangkok-Dhonburi area, it is recommended that well qualified teachers should be encouraged to teach in provincial schools by providing housing and other extra services.

3.3 To prevent children from streaming into the Bangkok-Dhonburi area, the quality of provincial schools should be improved so that they have the same or better quality than

those in the two cities. Also, the post-secondary institutions should be extended to provincial areas.

3.4 The comprehensive secondary school should be extended further in accordance with the National Economic Development Plan. Six important considerations should be studied in planning for the expansion of the project:

- a. The qualification of teachers for this type of schools.
- b. The condition of school areas and school buildings.
- c. Teaching materials needed, particularly workshops, laboratories and necessary equipment.
- d. Budget for this type of school.
- e. Parents' and Children's attitudes and expectations with respect to vocational education.
- f. Coordination and cooperation with institutions of higher learning.

3.5 Guidance services in secondary schools are important and necessary, therefore teachers responsible for this should have special training.

4. Vocational education

4.1 The number of students taking short courses both in private institutions and in those under the Department of Vocational Education increases every year. Thus vocational short courses should be provided to meet the increasing needs of the students both in the Bangkok-Dhonburi and provincial areas.

4.2 To help students who have completed their vocational education find suitable jobs according to their abilities and training, the Department of Vocational Education should provide placement services in co-operation with the Department of Social Welfare or with other organizations.

4.3 Besides improving guidance services in vocational schools there should be coordination of these services with elementary and secondary schools.

5. Teachers education.

5.1 A would-be teacher should be educated not only in academic and professional matters but also in one of the vocational areas to create a better attitude towards vocational education for children. Additionally, he should be capable of offering valuable assistance in community development through dissemination of information and through demonstration of procedures with practical significance.

5.2 To solve the problem of the teacher shortage at present, short courses in methods of teaching should be established by accepting students from grade 12. At the end of one year they would obtain a Certificate in Education (Paw Kaw Saw).

5.3 At present the lowest number of teachers which the Department of Teacher Training should produce per year is 9,000-10,000, determined by projected enrollment of school children.

5.4 All teacher training institutions aim to produce teachers of quality as well as being concerned with the quantity.

5.5 The teacher training institutions should cooperate with other departments so as to enable appropriate assignment of teachers to various locations.

5.6 Teachers training institutions should increase the number of students by 2,000 a year. The cost of school buildings and teaching materials would come to at least 1,000 U.S. dollars per additional student.

5.7 The curricula of teachers' training institutions should be consonant with what is offered in the elementary and secondary schools, and with other types of schools.

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6. STUDY ON SOCIAL WELFARE

INTRODUCTION

In Thailand the population is increasing at a rather rapid rate, which has a direct effect on the economy of the country. If the country's economy does not grow at a more rapid rate than the population, then the standard of living can not be raised, because the increasing productivity will necessarily be devoted to providing basic services for the growing population instead of being used for the qualitative and quantitative improvement of conditions which limit the standard of living of the present population.¹ Thus the rapidly increasing population may make it impossible for the Government to provide adequate public facilities in health, education, and housing. No government, however prosperous the country may be, is ever free from poverty and unemployment problem.

Thailand is making efforts to promote the well-being of the public through the National Development Plan, the Community Development Program, and other provisions for the welfare of that section of the population which is unable to help itself, e.g., neglected old people, deaf and mute persons, orphaned babies, and vagrant and mentally or physically handicapped children.

Western civilization is making a strong impact on the traditional way of life everywhere. Thailand's young people, who comprise half of the total population,² embrace it wholly at their impressionable and undiscriminating age. Teen-agers are particularly vulnerable because they experience concomitantly the cultural changes which are occurring and their own transition from childhood to youth. They need the guidance of their elders, and the State together with the public must also help in this, since many misguided youths cause frequent social disturbances and finally become criminals. In Bangkok groups of teen-agers dressed and acting in a manner calculated to draw attention can be seen at public places such as the cinemas and the restaurants. Their activities include "wars" carried on against other rival groups, robbery, and physical harm to other people.

Some maladjusted youths do not cause open public disturbances. Instead, they practise vices such as gambling, prostitution, and drug-taking, which have a harmful effect on their character and physical and intellectual development, thereby causing damage to society as well as to themselves.

The development of each child from birth until later youth deserves careful consideration in all its aspects, with even a greater emphasis at this present time in this changing society. If the child is lucky enough to have his family to care for him, then the family can provide for all his needs as the family means allow. But if the child is unfortunate enough to be without a family, then public

¹ Virawan, Amnuay "Is Population Policy Necessary for Thailand at Present?" *National Seminar on the Population of Thailand*, March 1963, pp. 350-3.

² *Public Welfare Publication No. 20, "The Future of Social Welfare Service"* p. 21.

organizations or private foundations should come to his assistance and provide him with some of what the family provides other luckier children. A welfare service must adequately fulfill the demand of the distressed for help in order to justify itself.

The children and youth who constitute a great part of the society, whether they be well-adjusted, healthy and normal—or otherwise, all need proper care and protection so that they will grow up to be useful to the society in which they live. For the healthy, normal and happy children there should be protective measures, and for the others, corrective and beneficial measures.

The matter of caring for children received much attention even in the olden days. When the society was still small and everybody knew their neighbors problems were few and uncomplicated and could be solved simply by individuals or by charitable institutions such as the local temple. As the society grew in size, problems also multiplied in number, in complication, and in dimension, to such a degree that now often they are beyond the capacity of any single individual or organization to cope with. As a result, various government organizations have been set up for this purpose. In the Ministry of Interior, the Department of Public Welfare organizes work in aiding children and families, the Police Department operates a section for youth and child welfare, and the Department of Corrections looks after the well-being of youthful delinquents. In the Ministry of Public Health, the Department of Medical Services and the Department of Health make surveys regarding the general health of the people, set up health centers for mothers and children and for the children of consumptive parents, and carry out health examinations of school children. The Ministry of Defense lends its assistance by means of the War Veterans Organization which helps the veteran soldiers and their families. The Ministry of Justice operates a juvenile court to administer disciplinary action as well as to rehabilitate misled youths. The Ministry of Education provides for very poor and orphaned pupils in many rural districts of Thailand, and for the handicapped children who are blind, deaf and dumb, or mentally retarded. Finally, the Ministry of Agriculture organizes programs for the 4-H Clubs.

In addition to the government organizations involved in public welfare activities, there are over 170 private organizations in this field. Some of these are subsidized by government funds or receive technical assistance from government organizations. Aid in the form of funds and personnel is provided also by foreign organizations such as UNICEF, WHO, and the Asia Foundation. More funds are being set aside from the budget each year to widen the scope of public welfare work.

There are 17 child study programs administered by various governmental organizations, one of which is the Bangkok Institute for Child Study. These organizations coordinate their efforts through the Center for the Study of Youths'

Problems, under the direction of the National Research Council of Thailand. This Center collects the results and studies any legislations concerning youths which is recommended by the child study organizations before bringing the proposed regulation before the Council of Ministers.

This study of the needs of children in regard to social welfare is presented in the following divisions:

1. Safeguarding family life, including all the factors involved in maintaining family stability with respect to financial, health, safety, career, and spiritual needs.
2. Special services for physically and mentally handicapped children (the deaf, dumb, blind, and feeble-minded).
3. Protection and care of homeless, dependent, and neglected children.
4. Delinquents.
5. Volunteers' participation and government and private agencies' cooperation.
6. Conclusions and recommendations.

1. WELFARE MEASURES FOR THE FAMILY AND CHILDREN

Out of a population of 27 million persons, 23 million live in rural areas, residing in over 40,000 villages.³ A vast majority of the Thai population, therefore is of rural origin. Their way of life differs from that of the city-dwellers owing to geographical and economic factors, yet both city and rural inhabitants share an important common interest, that of children. Every household wants its children to grow up into healthy, successful adults on whom the parents in their old age may depend. Parents will make any sacrifice in the hope that their children will have a good career and a high position. Sometimes excessive indulgence of children by parents may have undesirable effects on children. They may grow up into immature adults lacking in self-confidence as a result of over-protection during childhood. On the other hand, unstable conditions in the home or negligent and irresponsible parents can cause a great deal of lifelong damage to children's characters.

The family is thus the most important unit of the social structure. It is the group in which many problems arise and in which problems are solved. As the first and most intimate environment in a child's life, the family plays an important part in character-formation. Both good and bad habits become established from experiences in the family⁴. The family should be a place where love, warmth, security and happiness reign. It is a worthwhile effort, therefore, to promote these things in the family, considering the benefit gained ultimately by society.

1.1 Conserving and strengthening home life.

The traditional Thai way of bringing up children has laid great stress upon obedience of and respect for elders. The words and decisions of the elders were to be followed without questioning. Marriages were all arranged, and the partners lived together ever after, happily or indifferently, as the case may have been. In very few cases were the unions ever dissolved, this being regarded as a great scandal. It must be admitted, however, that marriage partners seem to have managed to be quite content and happy in this kind of arrangement. No longer are arranged marriages common in these modern day, however. Marriage no longer need to be a permanent partnership, and divorces and separation are not unusual. As a result, there are more children of broken marriages left to the care of society, and this costs considerable money.

To insure the success of a program to stabilize the family, there needs also to be—in addition to planning and funds and personnel—the right attitude on the part

³Krueakeo. Pitnoon, *Characteristics of Thai Community and Principles of Community Development*, Kueakul Printing Press, 1963, p. 1.

⁴Udhyanin Kasem, *Sociology*, Social Science Association Press, 1963, p. 20.

of the social workers and cooperation among various departments concerned. The work of helping families to be stable is carried out through the following approaches.

1.1.1 Preparation for parenthood.

In the Bangkok and Dhonburi areas, where means of mass communication abound and the level of education is fairly high, counseling services in the form of panel discussions and lectures are offered. These services are mainly carried out by the Division of Child and Youth Welfare of the Department of Public Welfare, and also by the Bureau of Family and Child Welfare of Thailand. The latter has given a great deal of attention to this matter. In 1964, the Bureau received 1623 people who came for advice and help⁵. It is hoped that in the near future the Council can extend similar services to those who live outside Bangkok and Dhonburi.

It is true that a limited scope of counseling services cannot solve all problems. Rather, a more extensive program should be set up so as to give advice to as many groups of the population as possible from various points of view such as that of doctors, lawyers, economists, and sociologists. Through adult education programs, young parents should be encouraged to make a habit of bringing their problems to the marriage counseling specialists. In the United States, for example, there are such organizations as the Marriage Guidance Clinic, which work in close contact with the institutions of higher education, and the Institute of Family Relation.⁶

In the rural areas, although marriage problems are fewer and not so complex, the concept of "enlightened parenthood" is practically non-existent. However, the joint efforts of the Ministry of Education and the Ministry of Interior through the Rural Community Development Program will make it possible to introduce this idea as well as many other improvements.

Young people may become a little less ignorant with respect to home and family life if the secondary school includes information about this in the curriculum.⁷ In addition, more intensive courses such as Modern Living or Adult Problems may be offered at a higher educational level in some schools, as they are in the United States.

⁵ From the Publication of the Bureau of Family and Child welfare, the Council of Social Welfare of Thailand.

⁶ Udhyanin, *op. cit.*, p. 157.

⁷ Ministry of Education, Secondary School Curriculum, 1960, Ministry, 1960.

1.1.2. Financial Aids.

In this age of material prosperity, a great deal of misery is caused by the lack of adequate material resources. In all developing countries there is a gap between the rich minority and the poor majority. According to a study by the National Research Council in 1961, there are at least 100,000 youths, aged 14-20 (not to mention younger children) in 204 schools in the Bangkok-Dhonburi area who have to walk for miles to go to school, who go without lunch, or who live on the charity of the temples.⁸ On the other hand, in countries with highly-developed economic systems the majority of the population is self-sufficient and welfare work in those countries is usually well-supported by the people. One aim of the National Economic Development Plan is to make as many Thais as possible self-sufficient so that the standard of living may be raised.

Since economic resources play such an important part in the well-being of a family, both government and private organizations are trying to do all they can for needy families. The Public Welfare Department used to aid families with both goods and money, but now, owing to lack of funds, the Department is attempting to assist and guide families to help themselves.

In 1963, of the 1,427 families receiving help: 144 families in financial difficulties received 137,697 bahts, 736 families received miscellaneous aid, such as powdered milk for babies, educational equipment, bedroom supplies, clothing and counseling and guidance.⁹

In addition, the Public Welfare Department makes loans with no interest to the poor throughout the country under the conditions that these loans be used for capital goods and that they be repaid within five years. In 1963 the Department made 60 loans totaling 89,250 bahts at which 14 loans amounting to 12,250 bahts were made to those in the Bangkok-Dhonburi area, while the other 46, amounting to 77,000 bahts, were made to those in the provinces.¹⁰

There are several private organizations which help needy families, such as the Association of Social Workers of Thailand, the Women's Association of Thailand, the Council of Social Welfare of Thailand, the Foundation for Helping Needy Students (under Royal Patronage), the Siamese Association of University Women, and the Foundation for Helping Needy Students of the Municipality of Bangkok-Dhonburi.

The Council of Social Welfare of Thailand coordinates many programs for the purpose of helping needy families. Direct financial aid to the poor is provided,

⁸ The National Research Council of Thailand, *Annual Report, 1941*, p. 123.

⁹ The Public Welfare Department, *Annual Report, 1963*.

¹⁰ *Ibid.*

and is channeled through other member organizations dealing with the problems of family and child welfare. A day nursery has been set up to help working parents. More extensive programs are being drawn up also to promote an understanding of family life and to provide job opportunities for housewives.¹¹

It is always true that help in goods and money serves only one small purpose, that of an immediate but short-lived relief. In the long run, it solves no problems permanently; poor conditions will remain unchanged until economic prosperity arrives—and this seems to be still in the dim future. Moreover, if the population continues to grow at the present rate, the burden of the Government and of society in providing for needy families will multiply.

Thus far there never has been an insurance program for some sections of the working Thai people, such as the low-rank government employees, laborers, employees in private firms, and petty traders (such as the pedlar type), whose amount of earnings is very unstable. Their earnings show no relationship whatever to the cost of living or the number of persons they have to support. If something unexpected happens to these workers, i.e., death or accident, that prevents them from working, their families suffer to an extreme degree. The most preferred profession is that of the government services because of the security given to government employees. The result is that trading and business professions fall into the hands of foreigners who populate the busy and prosperous trade centers, while the Thais, who are poor and not so fortunate, flock to the slum areas.

Preparations, however, are now being made to pass a law setting up a social insurance program. Research is being carried out concerning the income of the low-rank government employees, and the needs of the low-income group, in general. With due care and consideration for the matter of practicality and fairness, the social insurance program ought to benefit the low-income group as it has in countries where it has been successful.

One bad habit of the Thai people is free spending. Most Thais spend money on impulse rather than on a well-planned basis. This makes savings an occasional rather than a regular and compulsory act in the lives of a great number of Thai people. Many Thais become indebted through spending more than they have. The Government Savings Bank, operated by the Finance Ministry, has been trying—with some degree of success, especially among school children—to promote the saving habit in Thai citizens.

To encourage household members to make some contributions of their own to the meager earnings of the head of the family, the National Women's Council set up a program in 1959 to train youths, housewives, and other women in slum

¹¹ From the Publication of the Family Welfare Section, the Council of Social Welfare of Thailand.

areas to become economically productive. Through training, the youths are taught to spend their leisure time profitably. The Public Welfare Department has also organized a placement service to find work for students during vacations and weekends. Both programs have proved to be very popular.

1.1.3. Housing for the low-income group.

A most important factor affecting the well-being of people is whether they have a suitable place to live. In Bangkok and Dhonburi a great number of people have trouble finding a place to live and crowd into the unhygienic slums in the city. Work on slum clearance still goes on, for there are about 6,000 poor children in the 26 slum areas, some orphaned or abandoned, who need assistance (according to the report of the Committee for Children's Day Celebration, 1963).¹²

Housing shortage is a problem of the Bangkok-Dhonburi area almost exclusively. Want of a plot of land in the provinces for cultivation, failure to make a satisfactory living in agriculture, and better chances of finding employment attract rural adults to Bangkok and to other large towns. Youths are attracted also, but for a different reason. They come mainly to seek knowledge at the numerous institutions of learning which exist in Bangkok. Many of them were led astray and failed. The results of this movement from countryside to city are overcrowding, housing shortage, and unemployment. The country people thus fall an easy prey to crafty opportunists as well as to the criminals of the city.

The Government has tried to solve the housing problem by opening up housing services which rents houses as well as grants long-term loans to people who want to buy land and have houses constructed or repaired. From 1949 to 1963, loans totaled 163,543,619 bahts were granted to 5,234 families.

TABLE 1. GOVERNMENT SERVICES IN PROVIDING HOUSING 1949-1963.

Kind of service	Number	Cost in bahts*
Houses for rent	4,524	113,307,250
Houses and land sold by the Government on the installment plan	481	41,793,250
Money lent for building and repairing houses	229	8,443,110
Total	5,234	163,343,610

* One U.S. dollar is equivalent to 21 bahts.

Source: The Public Welfare Department, *Annual Report, 1963*.

¹² *Siamrath*, 15th year, No. 4359, August 5, 1964, pp. 1 and 16.

In Bangkok and Dhonburi, there is a 5-year plan for the development of housing facilities. By 1967, at Din Dang Road, Sam Sen Nai, there will be 5,000 families living in quarters established in accordance with this plan.

To eradicate the slum area at Tambol Lumpini; in 1965 the Thai Government and UNICEF will launch a Housing Project with a children's playground. The Project will provide homes for 10,000 people, of whom about 2,000 will be mothers and 4,000 will be children.

There are also housing projects in the provinces which are administered by the Public Welfare Department.

The housing projects will relieve the problems of overcrowding and slums in Bangkok and Dhonburi. Children will thus have an opportunity to live in a better environment.

To reach the goal of helping the poor to live in better housing and to have a better environment, the planning must be worked out carefully. For example, the rent must not be too high, and the assistance must be given to those who really need it.

Private organizations are also operating housing projects. These, in some degree, lessen some of the Government's work in housing. The Government must take care, however, that these private housing projects do not develop into more slums, in the future. The Government should exercise control by establishing the minimum size of the individual plots of land that may be cut up, the sewage system requirement of each house, the width and type of roads, and the reasonable price of land and construction materials so as to protect citizens of modest income from the profit-makers.

The Government also operates the Self-Help Land Settlement Project. Its objective is to relocate certain groups of people to improve their housing and working opportunities, and to relieve the pressure of overcrowding in the urban areas.

The first settlement was founded in Amphur Phrabhutabat, Saraburi, in 1940. The project has been improved and expanded every year. There are now 40 settlements in 33 provinces. In 1960, four of these settlements were set up for the hill-tribe people to promote a better standard of living and to encourage them to grow plants other than opium. The people grow maize, beans, castor oil seed, cotton, coconuts, tapioca, and sugar cane; and some raise cattle. In 1963, 396,190 acres of land are distributed to settlers; 322,768 acres are cultivated; 38,813 families, involving 170,191 individuals, were benefitting from these settlements.

The income of all settlers, amounted to 295,343,677 bahts of which 262,855,872 bahts was derived from agricultural pursuits. The average annual income per family was 12,125 bahts. This average was higher than the 1962 average by 907 baht.¹³

¹³ *Ibid.*, see also the Annual Work Report of the Thai Government, I (1964).

The work of the Self-Help Land Settlement Project is very useful. It brings some security to poor families and thus the environment of the homes is improved. Although a great amount of money is needed to subsidize the Self-Help Land Settlement Project, this program proves to be quite effective in the long run. This project and the housing project have done much towards promoting security for the families.

1.2 Maternal and child health services.

Children are an economic liability from the time of their birth until they reach an age at which they can provide for themselves. Furthermore, the return on any investment which is made in providing for the needs of a child during this period will be zero if the child dies before he reaches working age. Even if he lives through this period, his health may be permanently affected by the poor conditions encountered in childhood, and his earning power may be limited. Health in adulthood is often dependent upon the kind of care a young child has received and upon the physical condition of his mother before his birth. Thus programs which can provide information about mothers' health and the health of children must be put into effect so that expectant mothers will know how best to meet the needs of their children. In many highly-developed countries private agencies are partly responsible for welfare programs of this type, but in most of these countries such programs are also supported by the government.

In Thailand both governmental and private agencies already have introduced programs which emphasize helping mothers to develop good health for themselves and their children. Medical services have been provided so that expectant mothers can have prenatal examinations, safe delivery, and post-natal care. Information concerning pregnancy and child care has been made available to women prior to marriage also. If women can be educated in this way, their children will reap the benefits of better physical and mental health.

The Ministry of Health plays a large role in improving family well-being by giving mother and child care service to expectant mothers through the hospitals and Health Centers. The Department of Medical Services of the Ministry is responsible for this program. In addition, there is another division—Maternal and Child Care Division—which provides the following programs:

- Maternal and Child Health Centers in Bangkok and Chiengmai
- Central Health Service for Children
- Mobile Maternal and Child Health Units (Northeast, Central, South)
- Training of nurses and midwives
- Training of indigenous midwives
- Project for the improvement of district health centers and midwifery centers

There are many private agencies which provide health assistance to mothers and children. In Bangkok these are: the Society for Family Services, the Society in Aid of Mothers and Children of Thailand, the Thai Women's Association, the Society of Obstetricians of Thailand, and the Women's Cultural Club. The Medical Women's Association of Thailand holds physical examinations and guidance programs in health twice a month and publicizes medical advances through the mass media.

The National Council of Women operates a health program and a social welfare program. Its health program attempts to inform people, by means of the mass media and special voluntary training courses, about well-prepared motherhood, pre-marriage guidance and feminine hygiene. Pilot projects are to be organized from time to time in which representatives from various other associations will be sent out to offer their services.

The Women's Cultural Club organizes working parties which go to the Women's Hospital, Children's Hospital, Priests' Hospital and health service centers every Monday, Wednesday and Friday and help with the work in those places; it arranges contests for the healthiest mothers; and it cooperates with the Bangkok Municipal Health Service Section in physical examination and medical treatment of patients. The work of the Club in 1963¹⁴ included the following services:

- Physical examinations in 6 schools including 6,608 pupils
- Treatment given to 2,150 pupils
- Visits to and Examinations of 414 expecting mothers
- Visits to 2,702 families (in areas under the Council's responsibility)
- Demonstration lessons in child care to 7,629 attendants
- Counseling for 67 mothers

Within the Bangkok-Dhonburi Municipal Administration there is a section for mother and child welfare which provides medical care at public health centers, which visits mothers and children at home, and which conducts health education and also provides vaccinations against contagious diseases. There is one main health center (Municipal Maternal and Child Health Center) and several branch centers. Two hospitals belong to the Bangkok Municipality Central Hospital and Vajira Hospital—both of which have an obstetrics section.

In Bangkok-Dhonburi and in most of the larger towns of Thailand, adequate medical facilities are available for the care of mothers and children, but there is a serious shortage of such facilities in the rural areas. Also, rural mothers lack adequate knowledge about child care and about their own health during pregnancy and practise old-fashioned methods of child delivery. A serious lack of communication between the medical services and rural mothers also complicates the

¹⁴ Publication of the National Council of Women, May, 1964, p. 47.

problem. Services such as the distribution of food and clothing for newborn children are not available to mothers in remote areas because of the difficulty in transportation.

The rural people are also reluctant to visit doctors when ill. This is because drugs of all kinds are readily available to them without prescription from private drug companies which operate mobile units in the country. The Government has made medical kits available at health stations but the rural people have preferred to buy drugs from mobile units of the private companies. Thus the Department of Public Administration (Ministry of Interior) has taken these kits directly to the people so that they will buy these kits rather than those of the private companies. Also, in order that problems of lack of knowledge concerning health and medicines may be solved, the Ministry of Health has instituted the project for community health development and also uses the Mobile Maternal and Child Health Units to reach remote areas. The Department of Community Development—a part of the Ministry of Interior—has also put into effect a project to develop youths' and women's activities. The purpose of this project is to encourage proper maternal and child care, improvement of the home, and also to teach rural people how to care for their clothing and prepare healthful food. These activities may be made more effective if certain groups such as the Women's Cultural Club aid in their execution.

The Council of Social Welfare of Thailand plays an important role in promoting mothers' and children's health. It has an extensive program which embraces activities in the provinces as well as in Bangkok-Dhonburi.

From 1964 to 1966 the Ministry of Health plans to improve and develop health services by establishing first class health centers in every district at the rate of ten to fifteen centers per year. Also, second class health service centers will be set up at the rate of fifteen per year. Maternal and child services will be expanded in Chiengmai, Bangkok, and Nontaburi. Use of the Mobile Maternal and Child Health Units will be extended into the remote areas of the north-eastern, central and southern provinces. The Units will then reach twice the number of people they do now. During the next two years the Ministry of Public Health plans to increase the number of mobile health units available to the schools. There will be four units in Bangkok and Dhonburi and nine in the provinces. The long-term goals of health development in Thailand are improvement in sanitation, living conditions, school health, mother and child services, community health development and rural nutrition. It is the goal of the Ministry of Public Health to have a physician-population ratio of 1:1000 in the central part of the country and 1:10,000 in the other provinces within the years.¹⁵

¹⁵ The National Economic Development Board, *The National Economic Development Plan. 1963-69*, p. 175.

Public school health units are to be set up in every province, and maternal and child health centers will be provided in each general region of the country.

The shortage of doctors, nurses, and other trained medical officers in the outlying provinces stems mainly from the reluctance of these persons to work in areas where there is a lack of adequate supplies and communication and transportation facilities, not to mention the small financial reward. There should be a program which provides funds for bright rural students to continue their education in schools of nursing and in the other medical sciences. Then after completion of their program the students would return to their own town or village and work there. There is already a program of this type administered by the Ministry of Public Health—the Nursing Scholarship Project—but due to a lack of funds only a small number of students can be helped. It is suggested that the Ministry of Public Health encourage private organizations to contribute large amounts to this program. In addition, if higher financial compensation is given to those who work in rural areas the seriousness of the shortage of medical officers in the remote areas will be lessened.

At the first seminar of the National Social Welfare Organization in 1960, suggestions were made that every school have a social worker and that mental hygiene and child care should be taught in the secondary schools.

1.3 Recreation for children and youth.

In order to help youth spend their leisure time in a useful way, certain activities such as the Boy Scouts, Red Cross, YMCA, and YWCA have been introduced in Thailand. In past times most recreational activities centered around the home or the local temple, but as a result of social changes provisions for recreational activities have become a part of the social service program. Youth and community centers, playgrounds, public parks and national parks have been established by the Government and private organizations so that places of recreation may be available to the public.

The need for recreational facilities has increased in recent times mainly because people have realized that organized recreation can help divert the energies of youth to healthful activities rather than to harmful ones.

In the Bangkok-Dhonburi area living quarters are often quite crowded. There is no satisfactory place for youthful recreation. Thus even the schools have little space for children's activities and any available area is utilized for practice by athletic teams and not used by all children. There are practically no playing areas open to all children, and thus too many are inactive or find unhealthy or harmful ways to use their energies.

Much attention is now being given by the improvement of recreational activities in Thailand. For example the Council of Social Welfare of Thailand

holds biennial meetings at which relevant topics are considered, such as: 1) Use of leisure of children and youth, and 2) Youth activities.¹⁶

Actually, in Thailand activities for youth have been developed to a very satisfactory degree. This has been due to the cooperation between the Government and general public in encouraging such activities and in preventing youthful misbehavior through promoting self-expression and leadership. A listing of organizations which seek to develop leadership qualities in youth is as follows:

1. Boy Scouts—administered by the Central Council of Boy Scouting.
2. Girl Scouts—administered by the Girl Scout Association.
3. Junior Red Cross—run by the Ministry of Education.
4. 4-H Clubs—run by the Ministry of Agriculture.
5. Young Buddhists Association—of which there are 35 branches in the provinces.
6. Youth Centers—run by the municipalities and by private organizations.
7. YMCA
8. YWCA

Young leaders are of great value to a country, so recreational activities should always offer the opportunity for young people to lead. Some such activities are crafts, sports, music, hobbies, and camping.

1.3.1 Services for recreational and youth activities.

Youth centers are an important part of the recreation services provided by municipalities in that they give youth a place to learn how to lead and to use their energies in sports and other activities, including community service.

Youth centers are considered to be places of high importance in many countries such as the United States. They are set up to meet those needs of youth which are not met in the home and school, physical or mental. When children can work and play together, they are much less likely to become delinquent.

The importance of social services in the form of recreation facilities is very great in large cities where persons are crowded together around centers of business and where there are many persons of low income. But recreational assistance is also needed in provincial areas.

In 1961, the Municipality of Bangkok-Dhonburi established 18 youth centers, some of which were supported in their activities by the Rotary Club of Bangkok, the Rotary Club of Dhonburi and the National Council of Women of Thailand. In the provinces—Chiengmai, for example—the municipalities also have tried to form youth centers. One of the two youth centers in Chiengmai is run by

¹⁶ Report of the Second Meeting of the Council of Social Welfare of Thailand, March, 1962, pp. 71-80.

the local Rotary Club. In 1964 there were 23 youth centers in Bangkok-Dhonburi and 19 in the other provinces.¹⁷

TABLE 2. YOUTH CENTERS IN METROPOLITAN BANGKOK-DHONBURI.

Year	Number of Youth Centers In the Bangkok-Dhonburi Area	Number of Members		
		Boys	Girls	Total
1960	2	177	55	232
1961	4	358	145	503
1962	12	5,585	2,059	7,644
1963	21	7,079	4,387	11,466
1964	23	7,759	4,847	12,606

The Department of Public Welfare is in charge of the training of youth center leaders and also provides materials for such training. The Council of Social welfare of Thailand also trains youth leaders. Chiengmai's Rotary Club has its own program for training leaders. The YWCA, the Central Christian Office and the Association of Volunteer Women of Thailand also train young people in leadership.

Private organizations also have established youth centers, one kind of which is the recreational youth camp that is in session during the school summer holidays. Camp activities include encouraging leadership in youth. The Christian Central Office, YWCA, Siamese Association of University Women, and the Girl Guide Association of Thailand participate in the administration of these camps which are conducted in Bangkok and several provinces. There are also a scout camps in most provinces.

Youth hostels have been established by the Youth Hostel Association to promote economical traveling by youth for educational and recreational purposes. Seventeen of these hostels are maintained in Bangkok and in provinces.

The Ministry of Education also has established in Bangkok a center, called Children's Sala for children's activities which includes a lecture hall, library, and an exhibition center. The services of resource persons are also made available by this center to schools desiring special lectures. Most of the schools taking advantage of the center are secondary schools.

Many youth clubs have been set up. The Department of Agriculture has established 4-H clubs, the purpose of which is to improve rural youths' recreational activities and to increase their knowledge of farming, home economics, and animal husbandry. The Government plans to increase the number of 4-H Clubs to 215 in the near future. In Bangkok and Dhonburi there are also two Boy Scout Youth Clubs

¹⁷ *Youth Centers Publication*, the Department of Local Administration, Ministry of Interior.

providing activities in which any Boy Scout may participate. Another club for youth activities has been established by the Department of Public Welfare on Din Dang Road. The National Council of Women has a community service as a pilot project to provide a place for the people of the Trok Chan community to meet and work. Children from that area also are welcomed by this "Community Club" so that they may have a place of recreation.

There are other kinds of activities which have been planned for use during the leisure time of youth. The first of these is sport activities, both outdoor and indoor. Each town government attempts to provide a recreational area for young people and to promote a program of public sports. The Central Government also has a national sports program through which it encourages the people to participate in all kinds of sports.

The Lawn Tennis Association of Bangkok instructs youth in the fundamentals of tennis at the Women's Cultural Club. The YMCA and the Youth Association of Thailand also encourage sports for boys.

Amusements such as music, dancing, dramas, and movies are provided in every youth center in the country. As many places in Bangkok classes in the dramatic arts, both classical and modern, are held. Performances are given by these groups. The instructors are either volunteers or are persons sent by the Council of Social Welfare of Thailand.

In the provinces many women's associations offer training in dramatic arts to youths.

The Municipality of Bangkok also arranges musical programs and entertainment on weekends in Lumpini Park.

Women's associations often teach youths the arts of cooking and general arts and crafts. The YWCA, for example, sends some of its members to various schools to help teach students certain crafts and to instruct them in leadership and behavior. Women's associations also encourage other organizations to do the same. Lectures, discussions, and demonstrations are held by these groups. The radio is also used as a means of spreading information about youth activities. The Association of Home Economics of Thailand gives some instruction to 4-H Club members.

School trips are often made to other provinces or to Bangkok so that youths may learn more about their country. The Lions Club of Bangkok initiated such trips through an exchange trip program involving students of the provinces and in Bangkok. The Tourist Organization of Thailand and the Department of Public Welfare both offer special services for students, especially transportation facilities.

Many organizations help train young people in useful work during school vacations. One of these is the Girl Guide Association, which administers a camp in which youths are trained to care for younger children at the camp. Members of this organization are often sent to hospitals to assist in nursing work there and also to aid in the work done by day nurseries belonging to the municipalities and

to the Department of Public Welfare. The Association of Volunteer Women and YWCA also offer the same kind of services.

1.3.2 Programs for recreational and youth activites.

The National Municipal League of Thailand is made up of the 120 municipalities in the country and comes under the jurisdiction of the Ministry of Interior. This League, takes a great interest in providing municipal social services to the persons living within the various municipalities. A main concern of the League is providing services for children and youth such as included in projects like Youth Center Project, which includes public parks, sports fields, playgrounds, teaching of music and of arts and crafts. The Ministry of Agriculture also participates in the program of recreation by preserving areas of national beauty. Every municipality in the provinces has tried to have at least one youth center in its area along with a public park or other place of recreation.

The Council of Social Welfare of Thailand, which coordinates the efforts of social welfare organizations, has branches in the provinces. A committee of this council concerned with youth activities has been involved in several projects. The committee has begun to improve the yonth center at Lumpini Park in Bangkok so that it may be a demonstration center for youth activities and thus set an example for other centers. Also, handbooks for youth activities are being collected, edited, and reprinted by the committee. The training of youth leaders for camps is underway. In 1965 the committee plans to encourage the establishment of more youth centers.

The Council of Social Welfare has decided also to produce films for youth and to recommend the best films for the younger generation. There has been a seminar in which the influences of films on youth were discussed.

Since recreational activities and facillties are being improved and increased by so many organizations, it is expected that the youth involved in these programs will benefit greatly. This is especially true of children from families of limited means. In promoting youth activities, these organizations help protect young people from various vices. Success and continued progress in providing recreational activities depends most upon the cooperation of all those groups involved: school, home and the governmental and private organizations.

1.4 Religious and moral training.

Besides Buddhism, which is the national religion, Christianity, Islam, Hinduism, and some other less popular religious beliefs have a considerable number of followers among the Thai people. Each religion has its own places of worship,

along with officiating monks or priests. Freedom of belief has long existed in Thailand.

The teaching of Buddhist principles to Thai youth is done in homes, schools, and in communities, with the temples serving as centers of all religious activities. The teaching is carried out according to traditional practice, and there is almost no organized form of religious education for youth. Recent changes in economic and social conditions have affected the quiet family life of the Buddhist. Parents have to struggle harder than ever to make an adequate living. In many cases both parents are obliged to go to work. In some wealthy households housewives are continually engaged in social activities. Opportunities for going to the temple become more infrequent every day. Young people spend long hours at school and take every possible opportunity to go out with their young friends on days when they have no classes. Parents, except for the very conscientious ones, see their own children infrequently. Some families even go so far as to consider religious activities as befitting only elderly persons. Young men and women tend to think that the teachings of the monks are incomprehensible or too philosophical for their limited understanding. They then may stop going to the temple altogether. Children usually are completely indifferent and uninterested in religion, but follow their elders to the temple because it is something enjoyable for them to do. Thus the bond between youth and the temple is not very strong.

Buddhism is essentially a national religion without much allurement or attraction. Adults who are interested and whose beliefs are strong come to the temple of their own accord. The fact that children and youth may have a spiritual yearning too which they may not know how to fulfil has been sadly overlooked. For them religion must be made attractive, simple, and satisfying; and the sooner they are introduced to the Buddhist principles, the better chance there will be for them to gain an understanding leading to the adoption of Buddhist principles as guidance for their moral conduct later in life. This may eventually prove useful towards lessening some of the existing social problems.

There have been efforts made to enable the temple and youth to meet each other halfway. School textbooks about Buddhism and its various aspects, e.g., the principles of the religion and biographies of famous disciples of the Buddha, have been revised so that children can read and understand them. The teaching of ethics and morals has been enlivened by incorporating attractive teaching aids, better classroom activities, outside activities, and additional interesting reading material into the classes. Days of religious festivals are made holidays so that school children will be free to join their elders in the religious ceremonies and at the same time become aware of their religious significance. Also, the words in the prayers have been translated into Thai, so they will be meaningful to everyone.

On radio and television there are special programs arranged for every religious occasion. The Department of Buddhist Religion regularly stages ceremonies at a temple in which pupils, teachers, and monks take part. The ceremony of announcing that one will follow the teaching of the Buddha is also to be revised. The Department, in order to recruit personnel who can become leaders in these activities, offered an inservice training course for group leaders in religious activities for the first time in July, 1964. A course of instruction in the teaching of ethics and morals will be offered to secondary school teachers in 1965. It is hoped that the officials from various government offices who will be responsible for the organization of such activities in the future gain substantial knowledge and understanding from the course.

Cultural centers have been established by the Ministry of Education in ten schools and two temples. These centers have organized activities on various religious occasions, with the support of the schools and temples at which they are located. The activities includes discussions of topics concerning culture, and essays or competitions.¹⁸ There are mobile cultural units working in the provinces. The Department of Secondary Education has set up a moral education club to further interest in this area.

There are also private Buddhist societies which run eight Buddhist Sunday schools in the Bangkok-Dhonburi area. Eleven provincial towns also have similar societies. Those which do not have a local society of their own receive occasional visits by lecturers sent from Bangkok. In addition, Buddhist priests have been going out in remote rural areas to visit people to further moral instruction as it applies to practical day-to-day activities. In 1965 there will be about nine groups of such clerics serving the frontier areas of the nation.

As for other religious beliefs, Christianity in its many sects of worship already has its own efficient teaching programs. Christians in Thailand are devout and observe strict religious rules of conduct. The Christian churches and their congregations always work together in close harmony. There are missionary schools and churches both in Bangkok and in the provinces.

Thai followers of Islam receive encouragement from the Government in the form of exemptions granted to them by the Ministry of Education from certain regulations that might interfere with their worship. The Government even encourages the spread of Islam among the inhabitants of southern provinces.

Although the move towards providing for the teaching of ethics and morals to young people is not yet very intensive and widespread, its significance is very great indeed. It shows that a great deal of thought and recognition of child psychology and child development have gone into the matter. Both the public and the State are

¹⁸ *Thai Cultural Magazine*, Office of Undersecretary, Ministry of Education, 4th year, 7th issue., Sept., B.E. 2507, p. 52.

working side by side to bridge the gap between the temple and the people, and they agree in beginning from the same starting point, i.e., the child. Their ultimate goal is to provide for the mental health of the total population.

In the second National Public Welfare Meeting (March 26-April 2, 1962) a recommendation was made by a subcommittee advocating ethical, moral and religious training as the most important factor in promoting the sense of morality in youth. Besides courses offered in schools and Buddhist Sunday schools, visits to the homes by monks and talks given by them or by other religious experts during moral and ethics classes were also recommended.¹⁹ It is an encouraging fact that some such recommendations are beginning to be implemented.

1.5 Traffic safety.

When discussing the safety of children in the street, accidents involving vehicles must be considered in regard to these points:

Vehicles have an important part in our daily life, but on the other hand, traffic accidents account for many deaths, injuries, and permanent disabilities.

Dangers incurred in the streets involving motorized vehicles have had both direct and indirect effects on children and youth. Directly, children are involved in accidents themselves; indirectly, the head of the family may lose his life or be injured in accidents and thus leave the family emotionally without financial support.

Ways of improving children's safety must be found.

1.5.1 Results of research on road accidents.

The number of traffic accidents has increased a great deal in recent years, and is imposing a problem to the public. The Government has begun to give serious attention to the search for causes of traffic accidents. In 1963, the Division of Social Science Research (an office of the Council of National Research) initiated research concerned with accidents on the streets. Conclusions derived by Bhasooknirant is presented in the following discussion.

In general, the number of accidents in Bangkok and Dhonburi is three or four times larger than that in the provinces. The number of accidents occurring in these areas is about 3,816 per year while in the provinces there is an average of 842 annually. In the provinces, however, the number of fatalities is higher than in Bangkok-Dhonburi, although the total number of accidents is much smaller. The average number of deaths resulting from accidents in the provinces per year is 625, while in Bangkok-Dhonburi the number is 163. The reason such a high

¹⁹ Report of the Second Meeting of the Council of Social Welfare of Thailand, March, 1962, p. 33.

number of deaths occurs in the provinces is that inter-provincial buses are driven recklessly at a very high speed and when an accident occurs a great proportion of the people involved are killed. From 1957 to 1962, the ratio of deaths in accidents to the number of accidents was 0.7: 1.0. In Bangkok-Dhonburi, the ratio was 0.04 : 1.0.²⁰ It may be concluded that the main effect of traffic accidents in the provinces has been loss of life for many drivers, passengers, and pedestrians; In the Bangkok-Dhonburi area the main effect has been the damage and destruction of property.

The Department of Public welfare is quite 'concerned' about family and child security and has gathered statistics on the number of accidents throughout the country from June to September, 1963. The Department learned that accidents in the Bangkok-Dhonburi area occur at a rate 69% higher than in the provinces; all over the country, 42% of all accidents are automobile accidents; the total number of accidents was 8,547 for this period of time; of these accidents, 735 were killed; and the loss in terms of money was 1,000,000 bahts per month—not included in this figure are hospital fees and eventual loss of income due to injury.²¹ The following table shows the total number of accidents during a 10-year period in Bangkok-Dhonburi (1954–1963). This includes deaths, severe injury, and slight injury. It also includes cost in terms of money, both Governmental and public.

TABLE 3. NUMBER OF ACCIDENTS IN BANGKOK-DHONBURI, 1954-1963.

Year	Number of Accidents		Deaths		Severe injury		Slight injury		Cost in terms of money	
	Adult	Child	Adult	Child	Adult	Child	Adult	Child	Governmental	Public
1954	3194	87	33	143	31	1075	365	112,225.00	1,289,873.00	
1955	2834	103	31	164	42	1310	427	69,480.00	1,711,238.00	
1956	3502	140	40	196	52	1443	476	195,624.00	2,744,849.00	
1957	4324	119	33	222	51	1837	538	263,829.20	3,304,675.00	
1958	3527	122	28	294	80	1451	479	246,815.00	3,198,242.00	
1959	3292	101	42	320	118	1314	533	241,227.00	3,116,582.75	
1960	4180	135	36	419	126	1477	740	250,199.75	4,008,420.50	
1961	3908	152	32	460	198	1623	666	247,214.00	3,879,044.00	
1962	3846	147	46	432	135	1718	610	361,242.70	4,856,301.00	
1963	4239	186	69	498	183	1728	650	270,320.25	5,112,474.00	

Source: "Key to Road Safety", *the Thai-American Newsletter*, April, 1964, P. 39.

Only cases reported to the police are listed.

²⁰ Bhasooknirant, Sakdi, *Road Accidents*, Report of the Social Science Research Division, the National Research Council, 1963, p. 12.

²¹ Siamrath, 15th year, No. 4355 (Sept. 30, 1964).

Table 3 indicates that the number of accidents has shown a tendency to increase yearly. Danger to life and personal savings has increased accordingly. In the future the increase in number of automobiles and in the population owning automobiles will make the problem of traffic accidents even more serious. Three years ago the number of automobiles registered was much less than now—in 1959 registration was 60,821; in 1962 registration was 72,920.²² Thus the causes of accidents must be studied in detail so that dangers in traffic will be lessened.

From a study of the causes of accidents, it has been concluded that most accidents are caused by carelessness. Some drivers seem to have little regard for their own lives or the lives of their passengers and little respect for the law. Their politeness to other drivers is practically non-existent. These are the primary causes of the high accident rate. Secondary causes are careless passengers and pedestrians, stray animals, poor street and road conditions, unfavorable weather, and defective vehicles. Statistics on these causes may be seen in Table 4.²³

TABLE 4. CAUSES OF ACCIDENTS.

Causes of accidents	1960 cases	1961 cases	1962 Jan.—June cases	Average cases
1. Drivers	3,636	3,669	1,824	3,652
2. Passengers, pedestrians, pets	519	643	442	670
3. Road conditions, weather	230	260	249	292
4. Defective vehicles	57	41	53	72

As to the kinds of vehicles involved in accidents, it has been determined that in Bangkok-Dhoniaburi private cars have been involved in the largest number of accidents (944 cases per year, on the average). Taxis have the second highest number (899). Third highest is the samlor (motorized three-wheeled car), with 562 accidents. Trucks are the fourth highest with 375. Buses are fifth with 344.

In the provinces trucks have the highest number of accidents (367 per year). Private cars have the second highest average (182). Buses are third with 151, and taxis are last, with 40 accidents. It is clear that trucks cause the most accidents, due to the fact that they are widely used for transporting goods from the provinces to Bangkok or to other provinces. There being no passengers, the driver tends to drive recklessly. Furthermore, drivers often fall asleep at the wheel since most transporting of goods is done at night.²⁴

²² "Keys to Road Safety", the *Thai-American Newsletter*, April, 1964, p.p. 13-14.

²³ Bhasooknirant, Sakdi, *Road Accidents*, p. 78.

²⁴ *Ibid.*, p. 80.

From Table 3 and from the fact that there were 72,920 cars in 1962, it can be calculated that there were 53 accidents for every 1,000 cars, and that 26 per cent of those killed in the accidents were children. Accidents occur to children because of their carelessness in crossing or walking along the street. Children living in an over-crowded area take the street as their playground, and this often causes their death or serious injury. Therefore, the safety of families and children in the streets is of much concern to the State and to the public, and the two should cooperate to bring about greater public safety.

1.5.2 Methods of solving the problems of traffic accidents.

To decrease the number of accidents in the Bangkok-Dhonburi area, the Police Department has put up more traffic signals on the streets, and provide various devices for better public safety, such as signals marking where pedestrians should cross the streets and special radio and television programs to inform and persuade the public about road safety. As to the operations of highway patrol, these officials have become more strict which those who are careless in observing traffic regulations. From October 1963 to August 1964, 55,516 individuals were arrested by the highway patrol as a result of careless driving, and 2,503,395 bahts were collected as various fines.²⁵

The Public Welfare Department also takes a great interest in the problem of road accidents. A committee has been set up to carry out a study on this problem. The Council of Social Welfare of Thailand is now planning to set up an association for the prevention of road accidents.

The success of prevention and correction of traffic problems depends on the cooperation of various agencies, especially the traffic police and the courts. Enforcement of laws by the traffic police must be consistant and equitable: in court these persons proven guilty of violation of traffic laws must be uniformly punished. If these two things were done, drivers would become more careful and the number of accidents would decrease.

The cooperation of the Department of Public Utilities and of the Municipality also must be obtained in controlling traffic problems, since their operations often affect the flow of traffic. Transport companies (buses and taxis) should also cooperate, since a large proportion of traffic problems stems from their operations.

The problem of traffic congestion is a serious one, especially in Bangkok where traffic is quite heavy. Due to the amount of use which Bangkok's roads receive, they are constantly under repair, which disrupts traffic flow to an appreciable extent. As the area of Bangkok expands, all agencies involved in operations affecting the flow of traffic must be made to cooperate so that the disruption

²⁵ Annual Work Report of the Government of Thailand, I, 1964, p. 1026.

of traffic will be minimized.

As towns grow, traffic problems will grow in proportion, and town planning must take this into consideration. The National Economic Development Plans already call for the widening of streets and the construction of new roads in Bangkok and Dhonburi.

During every school day in Bangkok, students are transported to schools by the public buses. A few schools run their own school buses and some bus companies cooperate by providing buses especially for students. These efforts, however, have not yet met the needs of all children. There are a few government school buses, but a more extensive system of school buses should be developed because public bus travel is too dangerous for unaccompanied children.

In this report, only methods of decreasing the number of traffic accidents which involve school children are discussed. There are many suggestions how this may be done. First, Safety Education course must be made more practical so that the children get realistic experience for their behavior in traffic. In addition to this, children must be taught to be aware of the dangers of traffic which exist in getting on and getting off the bus and in crossing streets, and to obey traffic signals and to understand traffic problems and the reasons for the occurrence of accidents. They can also be taught what a great loss in life and property occurs as a result of carelessness and lack of driving courtesy. For example, in arithmetic classes, problems for the students to solve may be made up on this subject. If children gain right attitudes about traffic safety early, they may become good drivers as well as cautious pedestrians.

In order to reduce the number of accidents drivers of vehicles which are owned by companies—e.g., bus drivers—should be offered a chance to continue their education, have some vocational training, and to learn about safety and accident prevention. In this way drivers may become more competent in their jobs and the number of traffic accidents might decrease; and the companies would also profit from the increased safety and efficiency of their employees. Drivers and ticket boys should be taught to take particular care of students and young children. The Council of Social Welfare of Thailand has instituted a program of presenting annual awards to exceptionally safe and well-mannered bus drivers and ticket sellers. Facts concerning the causes and costs of accidents should be publicized so that the public will be aware of them. Agencies concerned with the reduction of traffic accidents should seek greater cooperation with automobile associations. Private businesses should aid in publicizing the rules of traffic safety.

1.6 Vocational guidance and counseling for youth.

The best way to prevent problems of behavior among children and youth is to give them training in a vocation and provide some work for them to do.

In the past, the worlds of children and of adults were entirely separate—adults worked; children played. Children were expected only to obey and not to question. Aside from this, they were neglected. But at present it is realized that if children are given a chance to work, they will be able to help the family economy and to form habits of using their time and talents in more constructive ways.

1.6.1 Vocational guidance, vocational training, and placement services.

Research on the problems of youth has been conducted by a committee of the National Research Council. A study was made of 10,000 students from 204 schools in Bangkok and Dhonburi, and it was found that vocational guidance is an immediate need in the schools because a large number of students had not made plans for their own educational future.²⁶

The findings of this committee are in agreement with those of a committee concerned with solving problems of education at various levels. The latter committee has concluded that any vocational training which is provided must be relevant to the needs of the various regions of Thailand and that guidance services should be available both in general and vocational education.²⁷

Many agencies such as the Division for Vocational Promotion (of the Department of Vocational Education in the Ministry of Education) have been instrumental in assisting youths to choose and prepare for a career. This Division surveys and gives information concerning vocations which will suit the capacities and attitudes of each youth. The Division publicizes vocational training through journals and magazines. The Office of the Under-secretary of the Ministry of Education has its own division of educational promotion and vocational guidance. It is the purpose of these divisions to encourage youth to seek careers not only in government service, but also in business and agriculture. This drive to interest youth in all fields of work can be clearly seen in the secondary school curriculum and in the Project for General Education Development and the Regional Education Development Project including Higher Education. These two projects began in 1958.

In three educational regions, pilot projects in the field of guidance have begun. For example, in Region Six the curriculum has been arranged particularly for the specific requirements of the region by local educational officials. General educational and vocational guidance has been provided by the schools, and meetings have been held to discuss future educational development. Educational news has been broadcasted by radio to the surrounding areas. Also, the schools have come to

²⁶ *Annual Report, 1961*, the National Research Council, p. 123.

²⁷ *Ibid*, p. 136.

be centers for community meetings and activities.²⁸

The Department of Public Welfare, Ministry of Interior, has also had a part in vocational guidance by giving tests, vocational information, and advice so that jobs may be found to fit the aptitudes of each youth. This Department also cooperates with the Ministry of Education in the over-all guidance program.

Among private organizations, the Siamese Association of University Women does a great deal of vocational guidance for students, teachers, and parents by means of television and radio. The Association has resource persons who are available for leading discussions and aiding students in Bangkok or in the provinces who need guidance. This Association desires primarily to give information concerning various careers and the preparation required for them.

1.6.2. Job training for children of low income families and those in children's home.

The Pibul Prajasa School, in Amphur Dusit, has been established by the Department of Public Welfare jointly with the Ministry of Education to offer education for children from families of low income in the Din Dang area. This co-educational school has classes extending from kindergarten through the seventh grade. Applicants' backgrounds are investigated before acceptance into the school is made; and when a child enters the school, he and his parents are advised by a social worker so the problems of education and adjustment may be overcome. In 1963 there were 1,827 students in this school. There also exists a vocational training center which gives vocational instruction in metalworking, automobile repair, radio repair, carpentry, and electrical repair to young people and adults who are seeking work. Youths may study these courses for two years, and adults, for six months. Each year the center produces in these fields 100 skilled workers who have no problem finding good jobs. This center is aided by the Australian government which has sent equipment to the center valued at 304,000 bahts.²⁹ In 1963 there were 192 boys in this vocational center, along with 173 adults.

In order that the workers in this center may gain experience on the job, the center allows them to do repair work for the public and the Government then receives the fees. In 1963, the total receipt of money from this source was 29,192 bahts. Certain goods are also produced by the workers which are sold in the open market.³⁰

²⁸ *Annual Report, 1962*, Ministry of Education, p.p. 49-50.

²⁹ *Annual Report, 1962*, the Department of Public welfare, p. 39.

³⁰ *Annual Report, 1963*, the Department of Public Welfare.

The Ministry of Education is operating two mobile vocational training units, which offer intensive programs for elementary training to the people in the southern and northeastern parts of the country.

Children under the care of the Department of Public Welfare are provided with both vocational training and general education. Young criminals under the care of the Juvenile Court and those at the Youth Detention Home, Department of Corrections, are also given vocational training so that they will be able to make a decent living and become productive citizens when they leave these institutions. Establishment of such centers in various town throughout the Kingdom would be helpful.

If private businesses would allow trainees from vocational centers to gain experience in their shops, this would be an even greater aid in meeting the unemployment problem.

1.6.3 Placement for students.

The Department of Public Welfare has improved its services in providing jobs during the school holidays. Government officials and private firms have shown an interest in helping students to obtain jobs, but most of the jobs offered are year-around positions which cannot be undertaken by students. Some require unskilled labor and students do not want this kind of job. Others are seasonal and do not fit students' schedules.

The total number of students applying to the Department of Public Welfare for part-time jobs—particularly those jobs involving the selling of small articles—has decreased owing to the direct contact the students have begun to have with industrial managers and producers. Furthermore, only a small proportion of applicants have been successful in obtaining jobs through the Department.

In 1959, for example, 7,299 students came to the Public Welfare Department for vacation jobs but the Department could provide jobs to only 1,007 students, or only 13.8 per cent.³¹

Various business establishments have shown an interest in finding temporary employment for youths during vacation time, but there are always more applicants than the establishments can use. If the Department of Public Welfare would consider the domestic type of work for students, such as cleaning, baby-sitting, washing and ironing clothes, tending orchids, caring for animals, and gardening, for which there may be occasional demand, not only would more youths be employed during vacations, but housewives would also find a great deal of relief from heavy labor.

³¹ Annual Work Report of the Department of Public Welfare, 1963.

1.6.4 Protection for working women and youths.

Women and youths are often forced by economic pressure to take up manual work like that of men. They should have special labor provisions and this is the responsibility of the Department of Public Welfare. The Department must see that the words of the labor control laws—the 19th decree of the Revolution Party of the former Government, and several regulations of the Ministry of Interior—be carried out. The following provisions are part of the labor control laws:

1. Employment licenses for women and children
2. A minimum age limit for working children
3. Protecting the welfare of women and youths through regulation of working hours, working conditions and types of work
4. The inspection by appointed officials of industrial establishments where more than one person is employed.

In 1963 working licenses were issued to 2,257 working women, and to 58 working youth.³²

Thus the necessity of some women and youths using their labor to contribute to their society and to their families has been recognized by the Government, which has taken steps to provide for their protection.

2. SPECIAL SERVICES FOR HANDICAPPED CHILDREN

In the past many Thai people believed that physically and mentally handicapped persons could be of no use to the community because they could not be educated in a normal way. It has been proven, however, that many unfortunate people can help themselves, given special training by interested and sympathetic personnel, and thus become less of a burden to their community. At the present time most governments give special services to disabled and handicapped persons. This category includes the deaf-mutes, the blind, those physically disabled, and the mentally deficient.

The plan of public assistance to the handicapped, particularly to those who suffer from mental illness, has been in effect for sometime in Thailand. Yet the scope of its operation has hardly been extended since its beginning. For example, the physically handicapped were left out until just a few years before World War II, when the blind were the first to receive attention. Such a slow development may be accounted for by the fact that the general public not only has distrusted physically defective persons, but also has shunned them. And since they had received neither public assistance nor adequate training, their ability to help themselves was

³² Annual Report, 1963, the Department of Public Welfare.

thus very low. The physically handicapped people also have been too conscious of their own defects to think of helping themselves. Besides, owing to the negligible attention paid to the handicapped and the lack of investigation of their problem in the country the general public was almost blind to the problem.

2.1 Help for the physically handicapped.

A survey of the number of handicapped children in Thailand has not yet been completed, although one is being conducted by the Council of Social Welfare of Thailand. Thus the exact number of such children is unknown, but there are quite a lot of them in institutions and hospitals throughout the country.

Instituting programs for physically disabled children (other than the blind) in Thailand has just begun. In 1958, Siriraj Hospital established a section for crippled children. In 1960, the Foundation for the Welfare of the Crippled established a home and school for crippled children at Amphur Pakkred, Nontaburi which accepts children from all provinces. In the future, if there is increased interest and cooperation from the public, it will be possible to extend these services to the provinces.

The Foundation gives help to all crippled children and adults in many ways, such as financial aids and hospital care. When the patients are treated in the hospital, either general education or vocational training is given to them according to their needs. Occupational training with training aids is provided for adults.

At present there are 53 children under the care of the Foundation, 40 among them being outpatients. Children from well-off families help the Foundation by paying for their board and lodging. The Foundation is trying to extend its services to take in more children.

2.2 Services for the mentally handicapped.

Services for these children began in 1956. The Division of Special Education belongs to the Department of Elementary Education, and the Division is responsible for retarded children and other children of low mentality. At some schools there are special classes for slow learners. These special classes were first held at three rural primary schools in Bangkok and in Dhonburi. Now the classes are held at six places. These classes constitute the first special effort made to help children of limited mental ability so that they may learn according to their own capacity. If these classes prove successful, the Department of Elementary Education plans to extend these operations into the provinces.

In 1957, the Foundation for the Welfare of the Mentally Deficient was founded (under the Royal Patronage). Its objective is to ensure that children of limited

ability are reared and educated so that these children may have the opportunity to develop their abilities as fully as possible. In the same year it was estimated that there were 250,000 feeble-minded children in this country. This constituted 1% of the population in 1957, which no doubt would amount to an alarming figure if feeble-minded adults were included.³³ Most children of limited mentality are kept at home; but due to the fact that economic conditions are changing in Thailand, people have to struggle for their living and no longer have time to care for the members of their families who posses limited mentality. These people may wander in the streets and be led astray by dishonest persons. It can be seen in the statistics from the Observation and Protection Center (Central Juvenile Court) that 33.6% of the young criminals are of limited mental ability.³⁴ Thus the Government must give serious consideration to this problem.

In 1961, the Department of Medical Science established a hospital for the mentally deficient in Bangkok. There are two kinds of services offered by this hospital, clinical service and educational service. The objective of the educational service is to train the mentally deficient patients to help themselves and to live among others especially among others also mentally deficient. These persons are also trained in manual work (arts and crafts) according to their individual mental capacities.

Since the opening of the hospital there has been quite a large number of patients. In 1961, there were 442 patients, the majority of whom were children of ages 1-18 years. See Table 5:

TABLE 5. PATIENTS IN THE HOSPITAL FOR THE MENTALLY DEFICIENTS,
BY AGE, 1961.

Ages	Number	Percentage
Under 1 year	5	1.1
1-3	31	7.0
4-6	75	16.9
7-9	125	28.3
10-12	86	19.5
13-15	61	13.8
16-18	26	5.9
19	33	7.5
Total	442	100.0

Source: Bulletin issued at the Opening of the Administration Office of the Hospital for the Mentally Deficient, March 21, 1962, pp. 10-12.

³³ From an Interview with the Director of the Hospital for the Mentally Deficient.

³⁴ Bulletin issued at the Opening of the Administration Office of the Hospital for the Mentally Deficient, March 21, 1962, p. 1.

At present only educable patients are admitted to the hospital. In the future, if trained personnel can be obtained and facilities can be made available, the uneducable may be admitted. Welfare services for mentally deficient children also have been provided through other channels. A kindergarten has recently begun operations to train the mentally deficient to help themselves from an early ages. Efforts have also been made to train qualified teachers and to extend services of this nature to individual homes. Furthermore, the Foundation for the Welfare of the Mentally Deficient makes an effort to promote research works in this field and to furnish the school and hospital for feeble-minded children with more facilities and better equipments. The Foundation also issues various publications in order to bring about among the public a better understanding of the causes and means of preventions of mental deficiency.

2.3 Services for the blind

There are no reliable statistics on the total number of the blind in Thailand, but in 1963 a survey of 10,000 children was made in order to determine the rate and the causes of blindness. It was found that the causes of blindness in Thailand are different from those in other countries, that in many of these cases blindness is preventable, and that 6 children out of 1,000 are blind (or 0.6%).³⁵

The Foundation for the Education of the Blind is in charge of most services for blind people in Thailand. The Foundation's policies of education for the blind, which emphasize self-help and independence, has won general public approval. Thus the blind are acquiring a greater chance to do useful work in society.

Although most of the financial support of the Foundation has come from foreign agencies and the interested public, not from the Government, the Foundation does receive some subsidies from the Government and has been granted a large provision of land for a permanent headquarters which already has been constructed. The Ministry of Education gives some help to the Foundation in the form of teaching aids and staff. Periodic health examinations are offered to the patients by the Division of School Health, Ministry of Health.

The Foundation has two schools for the blinds—one is located in Bangkok, the other in Chiengmai. The schools for the Blind are boarding schools, and due to their limited budget cannot admit every applicant. Children who attend the schools do so free of charge, except those who come from families which can afford to pay their expenses.

³⁵ Pamphlet, "The Week of the Prevention of Blindness," the Foundation for Sight Preservation and Prevention of Blindness, 1964, p. 57.

Most of the students in these schools are between the ages of 14 and 16. Their education extends from the primary grades through the tenth grade, after which bright students may be assisted by the Foundation to continue their education with regular students in pre-university classes, vocational schools, colleges, and universities. It is hoped that this integration policy soon will be extended down to the kindergarten level. Some handicapped students may even receive grants for study abroad. Besides acquiring general knowledge, these people are given adequate training in vocational skills in order that they may be able to become less of a burden to society by being able to support themselves and having no feelings of inferiority. After completing their training, they are also aided by the schools in securing jobs. If no job is available, they will be enrolled to further their training at the Center for Vocational Training of the Blind, Pakkred, Nontaburi, or at the Institute for Disabled People, or be returned to their parents.

Another organization, the Foundation for Sight Preservation and the Prevention of Blindness of Thailand, also offers its services to the blind. The Foundation has both short-term and long-term projects. First, it operates a clinic for the blind; it also publicizes information about blindness and its prevention. The Foundation emphasizes the necessity of taking care of the eyes during childhood. It advises parents to have blood tests and advised mothers on personal health during pregnancy. The Foundation is aided in its work by the Lions' Club. The Foundation is working in cooperation with the Private School Association to arrange for the pupils to have their eyes examined and treated, if necessary, free of charge. Every Friday a group of well-equipped oculists go out and visit schools for this purpose.

The American Foundation for the Blind (AFOB) and UNICEF have expressed to the Ministry of Education their desire to extend help to the blind. To start with, these two organizations will provide funds, appliances and experts.³⁶ The offer has been accepted by the Foundation for the Education of the Blind. This assistance from these foreign agencies will make a greater contribution to the welfare of the blind in Thailand.

2.4 Service for the deaf and mute.

This type of service began in Thailand in 1951 when the Division of Special Education initiated a Pilot Unit at the Municipal School Number 17 at Wat Somanat in Bangkok. In 1954, a Foundation was begun from a private donation in the form of buildings as well as funds for the education and of training the deaf and mute. This was named the Sethasathira Foundation. In the same year another foundation, the Foundation for the Welfare of the Deaf and Mute, was founded to cooperate with the Sethasathira Foundation. The school is located at

³⁶ Annual Work Report, 1962, The Council of Social Welfare of Thailand, p. 30.

Rama V Road, Amphur Dusit. The number of students has increased progressively and now another school has been established at Tung Mahamek.

In the school for the deaf, the children who are only partially deaf receive therapy in addition to general education so that they might develop their partial ability to hear. As for vocational training, the children are trained in the school and also receive instruction in places outside the school. The education provided for handicapped children comes under the jurisdiction of the Ministry of Education's Division of Special Education. The task of educating the handicapped has progressed satisfactorily because of the support of private foundations and organizations. In 1964 there were two schools for the deaf being operated by the Ministry of Education, in addition to four such special schools being operated by private foundations. Table 6 shows details about the special schools established for the handicapped.

TABLE 6. SPECIAL EDUCATION FOR HANDICAPPED CHILDREN.

Type of school	Number of classroom	Students	Teachers
Schools for the deaf	33	416	48
School for the crippled	8	52	5
Schools for the blind	20	124	11
Special classes for slow learners	9	161	14
Total	70	753	78

Source: From an interview with an official, Special Education Division, the Department of Primary Education, Ministry of Education.

In 1965, schools for the deaf will be opened at Khon Khaen, Pattani, and Tak. There will be Educational Funds for the Crippled. Assistance will be given by some foundations and private agencies.

Services both for physically and mentally handicapped children have developed satisfactorily in Thailand, a fact which shows that the Thai people are beginning to understand the problems of such persons and are interested in meeting their special needs. Providing services for the handicapped is a task which requires a great deal of understanding, sacrifice, and patience. The handicapped also need personal attention and affection from their families and from society. Especially, they should be given a chance to make themselves useful to society. The people of Thailand must ask themselves whether enough interest, skill, and finances have been devoted to the plight of the handicapped. It may be assumed that a large number of handicapped children remain unknown to those who are concerned for their well-being, so it is vital that a survey of the needs of handicapped children

be carried out. The public should also be made more aware of this problems so that they may contribute funds and cooperate in aiding this group. Then services could be expanded to meet the needs of all such unfortunate children.

3. PROTECTION AND CARE OF THE HOMELESS, DEPENDENT AND NEGLECTED CHILDREN.

At the present time, there are a large number of unfortunate children in Thailand. Some of these are orphans; others have been neglected by their parents, due to family poverty, illness, or imprisonment of one or more parents. These children often have no permanent home and become beggars. They are forced to sleep in public places. Because of this situation, the child must live without family support of any kind and often becomes delinquent.

Government and private organizations have been aware of the problems of these children and have tried to meet these problems by establishing children's homes. Here the children are afforded not only a place to live, but also a general education and vocational training so that they will be able to develop in a normal way in a secure and healthy environment and thus become useful members of society rather than social burdens. The Government has provided for such children only when help has been requested by social workers or law enforcement officers. A survey has not yet been made of the number of such children in the nation and so the total number of neglected children is unknown. However, in Bangkok-Dhonburi, the number of children in need of help who live in 26 slum areas³⁷ was estimated at about 6,000 by a committee for Children Day, 1965³⁸.

Many Government organizations such as the Ministry of Interior, the Ministry of Public Health, the Municipality of Bangkok-Dhonburi, the Council of Social Welfare of Thailand, the Thai Red Cross, the Rajaprasamasai Foundation, and the Rajaprajanukro Foundation have participated in programs providing for care of unfortunate children. The Rajaprasamasai Foundation cares for those who have been afflicted with leprosy; the Rajaprajanukro Foundation cares for those who have suffered as a result of national disasters such as floods. The Foundation for the Welfare of Needy School Children aids children by giving them clothing and books. The Thai Women's Association, the Pierra Foundation, the Girl Guide Association of Thailand, the Association of Volunteer Women, the Young Buddhist Association, the Foundation for Orphans, and other groups also help these children.

³⁷ A survey study of living conditions in Bangkok and Dhonburi was made in 1964 by the city-planning officials. It was found that there were all together 60 slum areas in Bangkok and Dhonburi.

³⁸ *Siam Rath*, 15th-year, No. 4359: (August 5, 1964).

3.1 Homes for neglected children

The Department of Public Welfare has a special division which gives aid to children and youth, and takes them into custody where and when this seems necessary.

There are in all eleven children's homes, including one detention home for boys and one for girls. There is a young children's home on Phya Thai Road in Bangkok and one at Pakkred, Nontaburi. At Rajavithi Road there is a home for older girls and older boys. For boys there are Bahn Pakkred, Bahn Mahamek, Bahn Banglamung, Bahn Srithammaraj, and Bahn Huey Pong. About 8,000 persons are now in these homes and each month about 100 persons leave and arrive at these homes.³⁹

Children's homes are under the jurisdiction of the Child and Youth Welfare Division, Ministry of Interior. Children are placed in these homes through the power given to social workers and policemen by the Child and Student Controlling Act of 1938. Before being placed in a children's home, youths are taken to a detention home where they remain for a period of time while their backgrounds are being investigated. Often the parents of these children have been imprisoned, are beggars, or are suffering from incurable diseases. The children often come from broken homes where they were ill-treated. Delinquent children are sent to Bahn Huey Pong, Rayong Province.

The Children and Youth Welfare Division sends social workers out to visit the poor in their homes and makes surveys of slum areas. It investigates police reports of homeless children and places such children in children's homes, or if the child has parents, takes him to his home. The social worker then advises such parents in regard to the care of their children.

Infants' homes. There are two infants' homes, one in Bangkok, the other at Pakkred in Nontaburi. Infants who are orphans or are found abandoned in public places are sent to either of these two homes, where they stay up to the age of five; then they are transferred to another home, or arrangements are made for their adoption. In 1963 there were 105 children at both homes, 57 being new-comers; and in the same year 44 children left the homes.

Children's home. Girls between the age of 5-17 and boys between 5-7 are placed in the children's homes, Bahn Rajavithi. In this home the children are treated as if they were in a large family or in boarding school. Provision are made for their education and vocational training both within the home and outside.

³⁹Ruenyote, Suwan, *Lecture on Child Welfare Service*, Department of Public Welfare, May 5, 1964.

Apart from elementary education, the children receive training in a wide variety of vocational subjects, e.g., dressmaking, beauty culture, hairdressing, and cooking—for girls. The vocational training courses usually last about two years. There were 264 children in 1963. When the boys at Bahn Rajvithi reach the age of 7, they are sent to any of the six Children's Homes for boys, where they stay until the age of 17. At Bahn Mahamek, Bangkok, there were 74 boys in 1963. These boys live in a family-like atmosphere and go out daily to school like other children. In 1963 there were 402 children at Bahn Pakkred, 232 at Bahn Banglamung, and 90 at Bahn Rajsima.

The children's home at Huay Pong, Rayong, has been set up as a correction center for juvenile delinquents. This residence accommodated 166 in 1963.⁴⁰

Altogether, in 1963 there were 3,204 children in the care of the Department of Public Welfare.⁴¹

The Department of Public Welfare has plans to double the accommodations for youths in its various homes and institutions during 1964-1966. Efforts toward assisting children in their own homes and toward finding suitable parents for adoption, will be expanded, and there will be a new welfare unit for young children and teenagers in the North at Chiengmai, and another in Khonkhan or Ubol.⁴²

Not only the Department of Public Welfare, but the Ministry of Public Health and various hospitals, as well as the Red Cross, provide care for abandoned and neglected children. The Central Health Service for Children run by the Ministry of Public Health takes young children from birth up to the age of 5 afflicted with tuberculosis or leprosy, and those whose parents are afflicted with such diseases.

At Pra Pradaeng Leprosarium, special treatment and general education and vocational training are provided for the afflicted children of the lepers. Rajprachasamai School is founded particularly to take care of children whose parents are leprosy patients under treatment. Thirteen other leper settlements exist in the provinces in which the families are allowed to live together.

There are also private organizations which aid neglected children, such as the Pierra Foundation, some missionary organizations such as the Don Bosco School, and the Maharaj Foundation, which is now constructing a home for destitute children at Rangsit, Patumtani, hoping to house 500 children.⁴³

⁴⁰ Annual Report, 1963, The Department of Public Welfare.

⁴¹ Summary of the Work of the Department of Public Welfare, 1963, pp. 35-35.

⁴² The National Economic Development Plan 1961-1965, the Office of National Economic Development Council, p. 152.

⁴³ Annual Work Report of the Government of Thailand, I, 1964, p. 1039.

3.2 Home placements for neglected children.

Apart from caring for neglected children in its homes and institutions, the Department of Public Welfare also places children with approved families, pays for their upkeep, and visit them frequently. If, from this arrangement, there arises a desire on the part of foster parents to adopt the child, the Department will be willing to hand him over. In 1963, children placed in families totalled 109, and 10 became adopted.⁴⁴

At the present time most social services are limited to the Bangkok-Dhonburi area; but interest in social welfare is increasing and social services in Thailand are expected to expand because private organizations have taken an interest in this field. For example, there is a clinic at Somdejchaophaya Mental Hospital which studies and deals with disturbed children, gives guidance to these children's parents and carries out research on methods of rearing children. Other helpful agencies are the Mental Hygiene Association and the Association of Psychiatrists of Thailand. The latter Association gives medical care to abnormal children.

Social work is still a new thing for the Thai people, but both the Government and the people have begun to realize that children are the future of the nation and thus giving children a good start will better the prospect of their leading productive lives. Thus the Government allocates a greater percentage of the budget each year for the extension of social welfare services so that these may expand along with economic and social development. Many private organizations also are expanding their social welfare programs. It is hoped that in the near future the needs of children in this area will be met.

4. YOUTHS WITH BEHAVIOUR PROBLEMS.

As matters stand, one can almost feel proud of the intellectual achievements and the general good conduct of Thai youth. It is reassuring that the future of the country lies in good hands.

However, instances of undesirable conduct are becoming increasingly evident as a result of material progress and of the concomitant social changes. There are vagrant children, begging children, and youths acting like disreputable adults. Some youths take to gambling, drinking, drug-taking, and prostitution. Some cause disturbances, join criminal gangs, and act as agents in prostitution traffic.

Obviously such misconduct is not to be tolerated, and efforts are being made to minimize this sort of behavior. Corrective and preventive measures in this direction have been carried out as described below.

⁴⁴ Annual Report, 1963, the Department of Public Welfare.

4.1 Young prostitutes.

With material progress and the growth of cities come a lot of new businesses and new professions. One business which has pernicious consequences and which is a defect of society is the procuring of innocent girls for prostitution. The Police Department has revealed that from January 1962 to September 1963, about 417 girls between 13 and 18 years of age were lured into becoming prostitutes.⁴⁵

The Thai Government is determined to eradicate the problem of youthful prostitution. The Government discontinued the registration of prostitutes in 1960.⁴⁶ The police then tried to reduce the number of houses of prostitution and the agencies for buying girls under 18 years of age. But the problem still exists. Procurers can make a great deal of money without having to work very hard, and so the business is very difficult to be eradicated.

From the Police Department statistics it is learned that of all girls accused of being prostitutes, 25% are natives of Bangkok and Dhomburi, 43% come from the Northeastern part of Thailand, 31% from the North, and only 1% from the South.⁴⁷ The standard of living of most people in the Northeast is rather low. Because of this and their limited education; the girls from the Northeast are easily led astray and finally sink into prostitution.

In 1960, the Committee for Research in Sociology made a survey and came to the conclusion that in Bangkok most of the girls of this profession came from poor families and have had little education. They seldom have had medical examinations. The research also reveals that most of the men visiting the prostitutes are young, between the age of 21 and 25.⁴⁸

Solving the problem of prostitution is an immense task. It involves finding a way to prevent girls from being enticed by procurers and finally being led to prostitution and it includes finding a way to prevent young boys from visiting prostitutes, the result of which may be the spoiling of their personalities. It has been established by medical practitioners that boys who engage prostitutes too frequently are emotionally immature, insecure, and weak—and that they often contract venereal diseases. Another problem is finding a way to help prostitutes to turn to other jobs.

⁴⁵ "Alarming Statistics", *Siamrath* No. 4509, December 1963.

⁴⁶ Prostitution Controlling Act.

⁴⁷ The Statistics from the Police Department.

⁴⁸ *Publication on Science Research*, National Research Council.

4.1.1 Prevention of young girls becoming prostitutes.

There are two principal factors which cause young girls to become prostitutes: 1) lack of education and the existence of poverty, and 2) poor relationships among members of their families.

The Thai Government has long wanted to put an end to prostitution, but its efforts have not met with much success. It seems that the most that can be done is to control it. Several governmental decrees have been issued to control prostitution, such as the Prostitution Controlling Act 1960, Young Girls' Protection Act, the Rule of the Revolutionists concerning Eradication of Delinquency, the Hotel Controlling Act, the regulation of the Ministry of Education controlling boarding houses, and the Children and Students Controlling Act.

The Police Department has ordered all police stations to eliminate all the brothels within their jurisdiction which procure young girls under 18 years of age. The ages of the offenders must be recorded, the history of how they came to be prostitutes written down, and the offenders themselves sent back home with instructions for their parents to file law suits charging illegal abduction. Research is to be done with the information obtained from these young girls. Warnings are to be issued to rural inhabitants, rural school teachers, and administrative officers about suspicious strangers and their practice of abduction.

Welfare work in this direction has been carried on continuously. In 1960 the Prostitution Controlling Act, applicable to the Bangkok-Dhonburi and Nakorn Rajsima areas, recommended that a center be set up for the purpose of giving treatments to disease-stricken prostitutes, and for training them for a decent livelihood.

The Department of Public Welfare has set up two homes for unemployed women at Pakkred in Nontaburi with accommodations for 900 women. In 1963 there were about 500 women in these homes, 105 having entered voluntarily, and the rest having been sent by the Police Districts of Bangkok-Dhonburi and Nakorn Rajsima. So far 288 women have been discharged.⁴⁹ Upon arrival at the homes, the women go through thorough physical and mental examinations. They then are given an opportunity to learn one of the women's trades such as beauty culture, laundry, dressmaking, and printing. Each of them may keep part of the income earned by their labor while in training.

Girls under 18 years of age who violate the Prostitution Controlling Act are sent to the Central Observation and Instruction Center, and the Central Juvenile Court. Those required by the Court to submit to corrective measures will be sent to a

⁴⁹ Annual Report, 1963, The Department of Public Welfare.

special welfare home for children and young girls where they will study both academic and vocational subjects.

4.1.2 Suggested solutions for the prostitution problem.

The subcommittee on Research on the Prostitution Problem has made the following suggestions:

a. First stage (immediate steps)

The Government should establish a bureau to investigate the amount of prostitution in Thailand. This bureau should then evaluate the effectiveness of the law in suppressing prostitution and also coordinate all activities of the various government agencies involved in the controlling of prostitution (such as the Police Department, Department of Prosecution, and the Courts). Also the Government should try to eliminate homes of prostitution and punish the proprietors.

b. Second stage (short term)

The Government should publish and broadcast information about the dangers of prostitution, especially in the northern and northeastern regions of Thailand since most prostitutes come from these areas. In addition, help should be given in the form of a place to live (hostel) and an occupation to young girls when wish to work in towns. Also, unmarried mothers and widows should be provided with a temporary place to live until they can readjust themselves.

c. Third stage (long term)

The Government should try to raise the social and economic status of women, and their standard of education. There should be a rehabilitation program for prostitutes and the laws on prostitution should be revised so that greater control can be exerted by the Police Department. Punishments should be especially stringent for procurers who induce girls under 18 years of age to enter prostitution. To control venereal diseases, persons contracting it should be required by law to report their illness (as is done in cases of other contagious diseases).⁵⁰

Nevertheless, the prostitution laws will not have much effect if young boys still believe in it as a means of asserting their manliness.⁵¹ Since the sexual drive is especially powerful in youths, their attention should be diverted from it by strenuous physical exercise and hobbies. Cooperation among the home, the school, and government and private organizations should be promoted to help youths spend their energy in the right direction.

⁵⁰ *Annual Report, 1961, on Prostitution Research.* pp. 146-147.

⁵¹ *Ibid.* pp. 149-151.

The success of the program depends upon cooperation with the police on the part of the man on the street, welfare workers, and private organizations. The school and the parents can also help a great deal in the guidance of youth. As for long-term prevention, when general economic and social conditions have improved sufficiently then people will begin to have their own enlightened views on the subject, and the rural inhabitants will be economically stable enough not to fall victims to the prostitution traffic.

4.2 Venereal diseases.

The effects of venereal diseases upon individuals and upon society are very serious; since these diseases impair both physical and mental prowess. Not only do adults suffer from such effects, but their children may also be handicapped.

The economy of a country may suffer also from the presence of venereal diseases. The expenses for the prevention and treatment of the diseases at the Nang Lerng Health Center in 1960 amounted to 89,620 bahts.⁵² This was only at one clinic. Men who contract the diseases have to undergo expensive treatment and may lose working time also. The money spent on prostitutes does not support the general economy of the nation, since the prostitutes spend their money in pursuing other vices.

The diseases are common among the middle class and among laborers. Because of their bad environment, men of the working class have frequent relationships with prostitutes. Moreover, they do not know how to care for themselves after contracting the diseases. It is also quite obvious that more adolescents now have the diseases than in the past, and the number is increasing. The Ministry of Public Health has revealed that within the past 5 years adolescents between 15 and 19 years old have contracted the diseases at an increasing rate. According to the blood test results from various V.D. Control Units, 15% of the patients are adolescents.⁵³

The temptations are many for young people and these temptations come to them at a time when they are in a transitional age between childhood and adulthood and are undergoing both physical and emotional change. They want to venture into things they have not known before. If, for example, their sex drive is not relieved in a proper way, adolescent boys turn to prostitutes. Problems of venereal diseases, illegitimate children, and abortion often follow.

⁵² *Annual Report, 1961*, National Research Council, p. 148.

⁵³ *Monthly Magazine*, "Ministry of Health's Concern with the Health of Youth," the Department of Public Welfare, 9th year, Vol. II, April 1964.

Venereal diseases in adolescents is a problem of every country. It is increasing in seriousness as the number of adolescents increases. In Thailand there is no exact total number of V.D. patients. The medical officers at the Health Center, Nang Lerng, interviewed 500 patients and reported as follows:

Economic and social conditions play an important part in the prevalence of venereal diseases. Of 500 patients interviewed, 43% (or 215) came from poor families. Most of them lived in Bangkok. If they came from the provinces, they had lived in Bangkok not less than 1 year. Of the number stated above, 37 boys had had 1-3 girls to sleep with; 102 boys had had 2-12 girls; and the rest had frequently slept with a greater number of girls.⁵⁴

Thus sexual relationships with girls who are infected with the diseases causes the diseases to be widespread. It has been established that quite a number of boys from well-to-do families have the diseases, but these cases usually are properly taken care of. The problems of boys from poor families or vagrant boys should be given greater consideration. These boys may finally turn to juvenile delinquency.

The purpose of studying the problem of venereal diseases among adolescents is not only to find a short-term solution to the problem, but also to attempt to prevent and to solve the difficulties that will arise in the future.

Prevention and treatment of venereal diseases among adolescents.

Sex problems of adolescents, such as venereal diseases, illegitimate pregnancies and abortions are often caused by ignorance. The success of a program of sex education would depend on communication of information to a large group of people, especially those in schools. The secondary school curriculum should include study of the causes and the results of venereal diseases, and should emphasize the advantages of medical examination and the possibilities of a cure. In social studies the students should be taught to be responsible in fulfilling their duties as members of society. Audio-visual aids can contribute a great deal to teaching about the dangers of the diseases, how they spread, and means of prevention. If sex education for adolescents were carefully considered and worked out, it would aid in the program of prevention.

In addition to providing some education about sex, another thing that can be done to ease adolescent problems is to raise the general standard of living through improving economic conditions. When people live in a better environment and have more education, they tend to have fewer conflicts.

The venereal diseases spread rapidly among adolescents because of their ignorance and shame. The boys who have the diseases do not realize their problem or

⁵⁴ Publication of the Sociology Research Division, No. 34, 1964,

are ashamed to seek a cure. Thus the diseases are spread widely, especially in unsanitary places. Adults should attempt to give their children the right attitudes concerning sex. And when problems come to light, they should not just condemn youths, but should also give them help in the form of medical care. Guidance and physical examinations should be provided regularly. Blood tests for youths would be especially useful.

The Thai Government has long been interested in controlling venereal diseases. There is the Venereal Disease Control Division in the Ministry of Public Health and there are specialized health units such as at Bang Rak Hospital and at the Mother and Child Health Center at Nang Lerng, which give services to people who have the diseases. Additionally, there are the Social Health Center, the Social Health Foundation; and muunicipal and private health centers. In rural areas UNICEF has supplied medical equipment.

Guidance and counseling offices are very useful in solving the individual's problems. The venereal disease problem has some of the same causes as the problem of prostitution has. If social and economic conditions are poor, many problems exist. Economic development and moral training will improve the social conditions. At the same time, youths should be given information about prevention and means of treatment.

4.3 Delinquent youths.

Juvenile delinquency is a problem which is of great concern to the Thai nation. At present there are many instances of questionable behavior of young people such as wearing improper clothing. There are degrees of this delinquency extending from minor, troublesome behavior to armed robbery and murder. Some other types of delinquency are gambling, use of drugs and consorting with prostitutes. Boys who tend to be delinquent come principally either from poor families, from broken homes or are homeless. They usually have had little education and they often find the nerve to commit crimes after associating with undesirable companions. But it is surprising to learn that nearly 40% of juvenile delinquents come from well-to-do homes.⁵⁵ Often, however, the home situations have not been healthy; e.g., some youths have been spoiled by overindulgent parents. Outside influences such as unhealthy movies and books often may induce young people to go astray. If such influences are not controlled, then the rate of juvenile delinquency will increase.

The problem of juvenile delinquency is very serious. There are two types of action which may be taken—preventive measures and curative ones.

From a survey made of young delinquents in the nation, it has been learned that most of them are from the Bangkok-Dhonburi area. In the provinces delinquents live mainly in commercial centers.

⁵⁵ Estimated from an interview with officials in the Central Juvenile Court.

TABLE 7. CRIMES COMMITTED BY YOUTHS IN THAILAND (AGES 14-19).

Kinds of offences	1961		1962		1963	
	Bangkok Dhonburi	Provinces	Bangkok Dhonburi	Provinces	Bangkok Dhonburi	Provinces
1. Theft, robbery, assault, murder, arson, drug addiction, gambling, rape, etc.	324	853	303	831	541	911
2. Offenders of the Child and Student Controlling Act of 1938 as reported by the police (no arrests made)	13,437	445	5,973	680	5,936	895

Source: Statistics from Child and Youth Security Control Division, Police Department.

From the table above one may conclude that there are two kinds of juvenile offenders—one is the young criminal; and the other is not yet a criminal, but has behaved so as to become subject to the Children and Student Controlling Act of 1938. Many more young people come under the second heading than the first. The second heading includes those who are vulgar or rude in speech and behavior, indulge in unlawful sexual relations, gambling, drug addiction or drinking. Those crimes committed most frequently involve property, such as theft, as can be seen by the statistics on juvenile crime shown in Tables 8 and 9.

A cause of these crimes committed by juveniles may be the substandard level of existence some of these young people have. Another cause may be the lack of parental training in regard to the property of others. Some have not been taught how to earn money in an honest way and thus turn to crime. The second most frequent offence is that of gambling. The seriousness of these crimes in terms of frequency is of the same order as for adult offenders, in that crimes involving property and gambling are most common. It may be concluded that the example which adults have set in crime has been followed by the younger generation.

In Thailand there has always been a tendency to gamble, especially among the rural people. At the present time many forms of gambling have been made illegal, e.g., cockfighting, but surplus money made by rural people is nonetheless often spent on various forms of gambling. These people often go into debt and finally may be driven to crime. As a result, families and children suffer.

TABLE 8. THE NUMBER OF CRIMES COMMITTED BY JUVENILES FROM 1961-1963, IN DETAIL.

Place	Year	Number of cases										
		Killing	Robbery	Stealing	Arson	Assault	Drug addict	Rape	Theft	Gambling	Others	
Bangkok	1961	4	1	3	1	36	1	8	132	27	32	323
&	1962	3	2	6	2	35	1	7	132	38	78	303
Dhonburi	1963	7	3	4	3	65	1	11	232	57	148	530
In the	1961	25	6	10	3	69	11	14	369	180	166	853
Provinces	1962	19	16	11	5	52	20	15	380	165	148	880
	1963	24	11	9	11	56	18	19	398	193	132	911

Source: Police Department.

TABLE 9. NUMBER OF CRIMES COMMITTED FROM 1961-63, EXCEPTING THOSE OF YOUTH.

Place	Year	Number of cases										
		Killing	Robbery	Stealing	Arson	Assault	Drug smuggling	Rape	Theft	Gambling	Others	
Bangkok	1961	89	41	20	5	1001	1198	114	2911	3346	78555	87280
&	1962	79	43	34	3	1678	1884	266	3955	3764	106585	118291
Dhonburi	1963	118	58	38	5	2033	1670	344	5385	4937	150259	163847
In the	1961	3538	2548	261	83	8860	4081	2504	18220	19932	140671	200738
Provinces	1962	3927	2679	246	72	1847	4495	2243	28845	19437	166417	220208
	1963	4228	3026	262	61	4506	4785	2339	20119	20178	18810	252314

Source: Police Department.

To solve these problems, right habits and attitudes about the earning and spending of money and of respect for property must be created among these people, because simple punishment has no durable effect on the prevention of crime. Creating healthy attitudes towards the property and lives of others is the best way to uproot and eradicate crime.

The Government currently is trying to find means of preventing or minimizing all offences. The emphasis is on economic development along with social development. It is hoped that problems resulting from poverty will be solved by these means.

Two special institutions for young offenders have been established so that juvenile delinquents will not have to be placed in the same places of detention as adult criminals. There are special government agencies which deal with young offenders such as the Department of Public Welfare, the Department of Corrections (both of which are part of the Ministry of Interior), and the Central Juvenile Court (Ministry of Justice). The Police Department has a Division of Child and Youth Security Control. The guiding principle followed by agencies is as follows: from the age of 7 through 20, the emphasis is on rehabilitation. For example, the young offenders are given instruction in general knowledge, morals and vocational training. This is considered to compensate for the lack of training they have received in their families.

Misconduct of youths is a common social phenomenon all over the world; due partly to the fact that the adolescent is neither an adult nor a child. When adolescents make mistakes, adults then know in what areas they need help. Children have pliable personalities and thus they can be given another opportunity to become good citizens.

4.3.1 The Central Juvenile Court.

In 1952 the Central Juvenile Court and the Central Observation and Protection Center were created under the provisions of the Act Instituting the Juvenile Courts of 1951. With it came a new system of rehabilitating delinquent children. A thorough study is made of the personality and the individual environment of each delinquent child at the time of the investigation of the circumstances surrounding his crime. This study includes physical and mental examination and is conducted for the purpose of aiding the Court in determining the kind of treatment appropriate for each child. It is done with the aim of rehabilitating him so he will become a good citizen. In each Court there are judicial assistants who are persons of good standing in the community and who aid in making decisions in the Courts. The task of the Juvenile Court is therefore more one of problem-solving than of providing a type of punishment.

The Observation and Protection Center administers a Welfare Home in which children are kept until they are brought to Court and where they live during their trial. There are 140 boys in the Home at the time the research party made a visit in 1964.

After the boys are sentenced they are sent to a training school, which currently contains about 300 boys. In the training school the boys are given primary education and vocational training of the types which are suitable to their individual talents and interests, such as carpentry, printing, barbering, sewing, agriculture and animal husbandry.

There is also a Welfare Home for girls which serves the same functions as the one for boys. Here girls learn dressmaking and other women's handicrafts in a school which is contained in the Home itself.

If the boys in the training school do not cooperate with the program there, they are sent to an annex of the school (a place of detention.)

In Bangkok the facilities for delinquent boys include an ordinary training school, an open school (for boys who have improved their behavior) and a closed detention annex. In Songkhla the school is of the ordinary type.

The Central Juvenile Court and social welfare workers make an attempt to support and assist each offender after his release from a juvenile home so that he will be able to make a suitable adjustment to society.

In general, the Court's treatment of juveniles is not as severe as that for adults. Often juveniles are simply fined, reprimanded, and returned to their parents rather than put in a training school. If the offender has no parents, he may be left in the care of a responsible individual or a private organization. In rare instances young offenders are whipped instead of being fined or sent to the training school.

Kinds of punishments used for delinquent youths are shown in Table 10.

The work of the three Juvenile Courts (in Bangkok, Songkhla, and Nakorn Rajsima will soon be expanded into other provinces.)

4.3.2 The activities of the Department of Corrections. (Ministry of Interior).

This department deals with young people of 18-21 years of age who have committed offences and have been sentenced by the Court to be kept in detention. The policy of the Department is to aid in their rehabilitation and to help them to become good citizens and thus these young criminals are confined in a kind of boarding school. These boys receive general education, have sports activities, but are not allowed to go out of the school. It is hoped that in such an environment boys will have relatively normal emotional, physical, and educational development.

TABLE 10. DISPOSITION OF CASES HANDLED IN THE CENTRAL JUVENILE COURT 1952-1962.

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Children referred to the Court for Trial	1115	1071	1203	1288	1580	1356	1548	1135	1143	1080	1118
Children who were adjudged to be guilty*	549	746	950	670	846	511	610	519	534	503	420
Measures used by the court											
1. Admonition	62	57	84	88	83	72	68	98	102	41	56
2. Caution to parent or guardian	77	75	69	64	67	53	80	33	66	132	134
3. Released to the custody of a fit adult	2	5	1	1	-	-	-	1	-	3	-
4. (a) Suspension of judgement or punishment with probation	45	88	217	60	69	59	75	76	101	86	99
(b) Suspension of judgement or punishment without probation				107	176	90	125	168	136	24	6
5. Corporal punishment in lieu of fine	2	4	-	-	-	-	-	-	-	-	-
6. Fine	238	287	247	262	341	135	170	65	6	30	18
7. Ordered to Training School	109	214	310	87	108	100	82	85	119	181	106
8. Ordered to Annex of Training School	-	-	-	-	-	-	-	-	-	-	-
9. Imprisonment	14	16	22	1	2	2	10	3	4	6	1

Source: *Refers to delinquent children who were sentenced in the same year as they were arrested and tried, *Handbook on the Opening Ceremony of the Juvenile Court, Nakorn Rajsima*, pp. 16-18.

There are two stages in the treatment of the young criminal. After sentencing, they are first sent to a Welfare Home for various examinations. Then they are taken to a youth reformatory. All of the boys sent to this place are first offenders and their terms must not exceed five years. There are two institutions of this type—one is at Ampur Mineburi, the other at Ayudhya.

Young criminals who undergo such a program of reform should eventually become better, more responsible people and a benefit to society. Since there are few young women criminals, they are kept at the women's prison at Klong Prem.

4.3.3 The activities of the Department of Public Welfare (Ministry of Interior).

The Child and Youth Welfare Division (Department of Public Welfare) works in cooperation with the Police of the Division of Child and Youth Security Control in looking after and controlling the behavior of delinquent young people.

If children of age 7-17 commit crimes, the treatment they receive comes under the provisions of the Act on Instruction and Training Certain Classes of Children of 1934. The Government is required by this act to send these offenders from all over the country except Bangkok-Dhonburi to a reformatory school for boys in Rayong. Also, if children violate the Children and Student Controlling Act of 1938 in any way, they may be sent to this reformatory.

In the Reformatory School at Bahn Huey Pong, children receive education according to the Ministry of Education's curriculum for Prathom 1-Prathom 4 and vocational training which covers five specialties: mechanics, carpentry, leather-working, sewing and agriculture. Their recreational activities are varied, and they also receive moral training. If boys behave well and are good students, they may be allowed to leave school before their term has been completed.

It can be concluded from this study of juvenile problems that most young offenders come from well-developed urban communities, e.g., from Bangkok and Dhonburi. Development of the economy, in transportation and in communication along with an increase in population—is spreading in the provinces out of Bangkok, and thus it may be said that soon areas outside of Bangkok-Dhonburi may also have to face the possibility of an increase in juvenile delinquency. Measures of prevention and eradication should be increased and extended to the provinces. Serious and extensive study of the problem should be carried out both in the Bangkok-Dhonburi areas and in the provinces. Such a study may be very helpful in carrying out the long-term policy of prevention and correction.

Much attention has been given to the problem of juvenile delinquency by the Government, and many programs have been instituted to deal with the problem. There has been an emphasis on social service and rehabilitation of this group.

This program, as described above, is administered by the Central Juvenile Court, the Department of Corrections, and the Department of Public Welfare.

In 1951, the Department of Public Welfare initiated its program for the prevention and control of juvenile crime. This Department is currently conducting a survey of the needs of low-income persons. The findings of this survey should be of great help in the study of juvenile problems so that crimes committed by youths may be minimized.

5. Volunteer Participation and State-Private Agency Cooperation.

In the past, social services were begun privately and these activities eventually grew into social services of national scope. Thus private welfare efforts become the foundation for state social services. The principles and methods used in governmental social service often are the same as those used by the private organizations of social service.

Society is ever-changing in the modern world, and some persons become unable to adjust to such changes for various reasons. Some of these persons come to experience the problems of poverty, unemployment, and delinquency, or they may feel they are unworthy in society. When such problems occur on a large scale, private agencies no longer have the means to remedy the situation, and government help must be organized.

Both private and governmental agencies have the same goals in the social service field—helping people who have suffered from social change.

Activities of private organizations are recognized as being very effective in providing welfare services and it is fortunate that private and government agencies have been able to work in cooperation. The number of these various organizations is quite large, and most are located in Bangkok. The organizations have realized, however, that giving services to rural areas is also of great importance. Secondary and college students have also taken an interest and participated in extending social welfare benefits to others.

The importance of social work in Thailand has been fully recognized. As early as 1942, the National Council of Culture instituted a course in social work so that social workers could be trained. In 1963, an institution was founded by the Council for training in social work. The following year the Faculty of Social Administration was set up as a part of Thammasat University. In order that there be a coordination of social work in Thailand, the Government established a National Council of Social Welfare Agencies in 1960 to promote efficiency in giving welfare services. The First National Conference for Social Work was held from February 29 to March 7, 1960. About 112 organizations registered as members and sent representatives to the Conference. As of March 1963, there

were 141 member organizations—66 in Bangkok-Dhonburi and 75 in the provinces⁵⁶. In 1961 the National Council changed its name to the Council of Social Welfare of Thailand.

The Council of Social Welfare of Thailand has played a large role in coordination of social work in Thailand. It has encouraged participation in social work, made surveys of social needs, and has studied the problems of social welfare in Thailand. The Council has also tried to promote social services in general throughout the country, has sought funds for social services, has given subsidies to members of the Council, and has helped the members to improve their services.

Most of the governmental social services of Thailand come under the jurisdiction of the Department of Public Welfare, Ministry of Interior. The Department offers training for social workers and assists private organizations concerned with social services. Other government agencies which have a part in providing social welfare services are the Ministry of Public Health, the Ministry of Justice, the Ministry of Education, and Thammasat University (which trains social workers). Each year part of the national budget is allocated to social welfare services. The King and Queen of Thailand have also been quite active in promoting the growth of social services. Also, people in business have supported such work.

The future of social welfare in the country will depend to a great extent upon cooperation between government and private organizations. There are still gaps in cooperation among the various agencies which detract from their total effectiveness; it is a goal of the National Council of Social Welfare to close these gaps and also to eliminate wasteful competition among all the groups. It is suggested that government agencies be responsible for providing for basic human needs through financial and material aid. The private agencies, on the other hand, might conduct visiting and guidance services, giving advice on child care, occupations, and meeting other important needs.

The Government has tried to widen the reach of its services, but private agencies will come to have an increasingly active part in social welfare. They should be aided in this through technical assistance from the Government. The belief that most social services should be operated privately is based upon the assumption that people involved in private social work have a greater preparation and knowledge of their jobs than does the Government. If this is done effectively, then the burden of the Government will be greatly lessened and private agencies will be able to provide services which meet the needs of the people. Private organizations will also have the advantage of working in a more flexible manner, since government activities are highly bound by law.

Recently, private organizations have been very active—a promising sign for the future. But the scope of the people's needs has not yet been completely recognized because of lack of research in this area. So in order to draw up a complete

⁵⁶ Annual Work Report, 1962, the Council of Social Welfare of Thailand p. 35.

scheme for social service in the future, it will be necessary to conduct research. In this way the needs of the people may better be met.

Thailand's plan for future social service activities should be endowed with definite national goals and the policies should be clear to all involved. The objectives could then serve as guideposts for all social service organizations so that the various organizations may be prevented from working at cross purposes. Then Thailand's organized, clearly-stated program of social welfare would be known as a valid plan by other countries and support may be received from them.⁵⁷

6. Conclusions and Recommendations.

From the study of social welfare services in Thailand, it can be concluded that, in general, a child will have a normal life and develop in the right direction—so as to make himself useful in the future to his family and community—if the family is able to provide for him a good environment. However, in our modern society there are many problems that can affect the happiness and stability of the family. These are, for example, the problems of economic well-being, educational background, health, and sociopsychological adaptability of the child and his family. If the family cannot meet the basic needs of the child, the latter may have behavioral problems and become anti-social in some respects. Therefore, social services are established to meet the needs of the child which the family and other major social institutions (e. g., the schools) cannot meet. These services must be extended if the resources of the family (which are determined in part by economic and social conditions) are not adequate.

Orphans or deserted children who lack an opportunity to enjoy family life need help from the State and from society in the form of shelter and emotional support to enable them to grow up satisfactorily. Physically and mentally handicapped children, being impaired in their ability to help themselves, also need special care. Thus improvement of the welfare of children as well as that of their families must be recognized as essential.

Family and child welfare services began in Thailand a long time ago. However, they have become State and community concerns only during the past few decades. Some feel that these services have already been well established in the country. In truth, the rate of progress has been rather disappointing, for services in this field are still in the beginning stage. This may be due to the fact that the Thais still have relatively little interest in this field. It has always been true that a great number of tasks initiated in Thailand seem to lack continuity of effort, coordination, and an efficient and devoted group of persons to carry them out.

⁵⁷ Pakorn Angsusingha, "The Future of Social Welfare", *Publication of the Department of Public Welfare*, No. 20, pp. 41-43.

As a result, this lack of efficiency has been a serious drawback to the execution of any well-intentioned plan. The projects that have been inaugurated do not always reach completion.

Because of these circumstances, many social workers have been trying to improve social welfare services in the country. In 1960, the first National Seminar in Social Work was held in Bangkok. There was a recommendation that the emphasis in this field should be on preventive measures. It was felt that the Thais should be guided by ethical principles; that they should develop a true sense of responsibility and obligation to their work, their families, communities, and country; and that they also should make an effort to utilize to the utmost what they have in their country. It was further recommended that there ought to be a serious attempt to obtain qualified and devoted men to carry out the tasks in this field. To achieve a better social service scheme, it was also agreed that any laws, decrees, or regulations that might interfere with the protection and promotion of child welfare should be abolished. New provisions should be made to guarantee and promote the safety and well-being of children of various groups, such as orphans, the deserted, the poor, the handicapped, and problem children.

At the second National Seminar in Social Work in 1962, a suggestion was made to extend both national and private social work schemes to as many rural areas as possible and to try to find means to promote coordination among various social work groups as well as with the general public throughout the country.

These recommendations are indeed of great importance. It cannot be denied that whether family and child welfare programs will reach their goals depends upon three basic factors: first of all, the problems of administration (which includes cooperation and coordination among those involved in the field of social welfare services) must be solved; secondly, there must be a highly qualified and trained group of men and women who are willing to devote their time and energy to the tasks; lastly, it is necessary for the Government to provide for the welfare of very child and his family with as carefully and appropriately drawn legislation as possible. However, social welfare services in Thailand cannot obtain satisfactory results nor expand in scope rapidly enough to meet the modern trends and the increasing needs of children unless one takes into consideration two other vital factors.

1. There must be a continuity of effort to achieve a single end, with no or little concern for a change in the government administrative group.

2. There must be good public relations to enable the people to be more familiar with the policies, accomplishments, and significance of the work in this field. Only by this means will the mass of the Thai people understand, grow interested, and be willing to give some time and financial support for these services. When social welfare services become a public concern, there is little doubt that the public

assume a more active role in carrying out these tasks, thus helping considerably to lessen the Government's burden in this field.

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7. STUDY ON MANPOWER

INTRODUCTION

This portion of the survey concerning Children and Youth in National Planning and Development of Thailand involves children from 0-19 years. The emphasis of this part is on manpower and general economic aspects of Thailand. Since manpower planning has played an increasingly important role in economic development, it is advisable to consider the quality and quantity of human resources as being particularly significant aspects of the total economic potential.

The economic outlook, its favorable as well as its unfavorable aspects is discussed in this report. The economic target for 1966 is also included. The stages of economic growth are determined both by the level of GNP and by the definition of W.W. Rostow.

The demand for, and supply of, manpower presented here is concerned with children between the ages of 0-19 years. This includes 4 levels of education, through Grade 4, 7, 10 and 12. The demand for, and supply of, children of the four levels are presented in 9-year and 10-year intervals ending at 1970 and 1980, respectively. The 9-year and 10-year average of the demand and supply are computed from the data prepared by the working group of The Joint Thai-USOM Human Resources Study of 1963. The results of these calculations would intendedly predict the future aspect of manpower during the two intervals, whether the supply would be in balance with or short of or in excess of the demand.

The supply of manpower at various levels of education are those who want to leave schools after graduation from Grades 4, 7, 10 and 12.

The comparison of supply and demand for manpower is provided for two intervals, between 1962-1970 and 1971-1980. The 9-year and 10-year averages of supply are brought to compare with those of demand. Demand is represented by the demographic demand and the economic occupational demand (see pages 20-27). Thus the demand would appear different even for the same given period of time, depending upon which demand schedule is employed.

In evaluating Thailand's manpower situation, some causes and reasons for anticipated conditions are explained as a private opinion. Some recommendations for actions are also given. Anyhow, the reliability of all these predictions depends a great deal on the data from the Joint Thai-USOM Human Resources Study. If their calculations are to a great extent reliable, the actual outcome of manpower will likely be as predicted, and vice versa. In any case, all these predictions would at least indicate an outlook of manpower potential.

THE ECONOMIC OUTLOOK OF THAILAND AND THE TARGET OF DEVELOPMENT

The role of manpower planning in economic development.

Recently manpower planning has played an increasingly important role in economic development. One of the most significant questions is, what is the optimum amount of manpower required for the high productivity demanded by economic targets of national planning? In other words, how much manpower is adequate for full scheme of economic development?

If the demand for manpower in general exceeds the supply, such manpower shortage would lead to the problem of underproductivity, or the GNP¹ would not increase sufficiently for a growing population. On the other hand, if the supply of manpower exceeds the demand, this surplus could lead to the problem of unemployment or underemployment.

The future size, rate of growth, age-composition and geographical distribution of the population would have a great influence on the future supply of manpower. According to the four population projections provided to the National Seminar on Population in 1963, in 1980 the Thai population will have increased rapidly to 48-54 million.² Then the child population between 0-9 years of age, or the economically inactive group would represent around one-quarter of the total population. (See Table 1)

TABLE 1. PREDICTED POPULATION OF THAILAND IN 1980, BY AGE GROUP.
(in thousands)

Age Group	Projection I	Projection II	Projection III	Projection IV
0 - 4	9,899	6,628	10,136	7,230
5 - 9	7,989	6,178	8,232	6,718
10 - 14	6,587	5,555	6,796	6,330
15 - 19	5,518	4,707	5,576	5,576
All age	53,291	48,508	54,336	49,449

Source: *The National Seminar on Population*, National Research Council, 1963.

¹GNP as a universal definition presented by Professor Barry N. Siegel is "total value of final output of goods and services produced by residents of a country during a given period of time," *Aggregate Economics and Public Policy*, Richard D. Irvin Inc., Illinois, 1960.

²Gille, Halvor, and Chalothorn, Thip, *The Demographic Outlook of Thailand and Some Implications*, The national Research Council, 1963, p. 5.

Such an increase in population would create mounting problems, not only of the economy itself, but social and educational ones as well. If the population explosion results in a rate of growth higher than that of productivity, a fall in per capita income, standard of living and also of social welfare contribution would occur in this country.

The benefits to be derived from educational planning are urgently needed as the population continues to increase so that the supply of human resources must be adapted to economic manpower requirements. The problems of underproductivity and unemployment, as affected by imbalances in the supply of skilled manpower, say the deficit and surplus, respectively, are aggravated in the absence of careful educational planning.

According to the objectives of the National Scheme of Education, the level of compulsory education is intended to be raised to Grade 7. In 1960 the plan was implemented to some degree in certain areas. If, by 1980, the provision for compulsory education to Grade 7 has been put into practice throughout the nation, it would have a significant effect on the manpower structure. In the shortrun, a lack of manpower at the 4th grade level would occur, but this problem would no longer exist because the manpower of 7th grade level would replace that of 4th grade level. In the long run a manpower supply which has a higher level of education would provide the basis for increased productivity in the economy.

The present economic situation.

1. The economic condition of the last decade (1951-1960), before the economic development plan came into effect in 1961, shows a more favorable trend than prior to 1951.
2. Currently the GNP shows an annual increase of 5%, whilst per capita income increases at 2% per annum, and the GCF³ amounts to 18% of the GNP.⁴
3. The rate of population growth is around 3.2%, or approximately 3% per annum.⁵
4. The quality of manufactured products is still poor. Inadequate facilities for transportation raise the costs of production. There is also a high degree of wastage in the methods of utilizing and consuming national resources. Thus careful conservation of forests, fish, and minerals is needed. Forest conservation includes the maintenance of existing forests as well as reforestation, particularly in watershed areas.⁶

³GCF (Gross Capital Formation) consisting of

- 1. Imports of capital goods,
- 2. building and construction, and
- 3. other domestic capital formation.

(Thailand's definition)

⁴NEDB, *National Economic Development Plan for 1961-1963-1966*, Office of the Prime Minister, pp. 1-2.

⁵*Ibid.*

⁶*Ibid.*

5. The main exports are mostly agricultural and primary products of undoubtedly inelastic supply. This inelasticity leads to problems of sharp fluctuation income. In order to avoid these problems, external market should be expanded through diversification of output and marketing research is also needed.

From 1952-1962 big deficits remained on the balance of trade. (See Table 2.) Fortunately, however, a favorable balance of payments was indicated, because there were invisible items which compensated. These were:

- 5.1 income from tourist business.
- 5.2 other international services.
- 5.3 foreign investments.
- 5.4 international grants and material supports.
- 5.5 war reparations from Japan.⁷

TABLE 2. THAILAND'S BALANCE OF TRADE, 1947-1962.

(million of baht)

Year	Import	Export	Re-export included	Balance
1947	1,384	968	42	— 416
1948	1,747	2,076	73	+ 329
1949	2,274	2,777	71	+ 503
1950	2,625	3,453	49	+ 828
1951	3,705	4,413	38	+ 708
1952	5,524	4,619	68	— 905
1953	6,472	5,772	78	— 700
1954	7,022	6,177	71	— 845
1955	7,503	7,121	111	— 382
1956	7,655	6,924	207	— 731
1957	8,537	7,540	248	— 997
1958	8,237	6,447	254	— 1,790
1959	8,988	7,561	303	— 1,427
1960	9,622	8,614	192	— 1,008
1961	10,287	9,997	280	— 290
1962	11,504	9,529	274	— 1,975

Source: Dept. of Customs, Annual Statement of Foreign Trade, *Statistical Yearbook*, Thailand, 1963.

⁷Seminar on Economic Problems, Chulalongkorn University, by Luang Tawinsetpanichayakarn, the former Under-secretary of the Ministry of Economic Affairs, 1964.

Long-run perspectives..

1. Seventy million rais,⁸ approximately 20 % of the nation's total area of 321 million rais, have now been brought under cultivation, while the remainder is forest, grazing land, swamps, lakes, and unclassified land. The area of irrigated land will increase by ten million rais when each irrigation project is at full productive capacity in 1970. These projects will also provide flood control, as well as hydroelectric power. A two crop system will be widespread.⁹

2. The total prospective area for cultivation will increase from 70,000,000 rais to 120,000,000 rais. During the next two decades the cultivated area will be extended to over 100,000,000 rais, thus raising the total agricultural output.¹⁰

3. According to the reports of farm experiments supervised by the Research Division of the Ministry of Agriculture, there will be an increase of 30% in total farm production when fertilizers are used for cropping.¹¹ This includes rice and some kinds of major crops, for instance, all kinds of beans, tobacco, cotton, maize, cassava, kenaf and sugar cane which will increase when the irrigation schemes are expanded.

In long run perspective, crop diversification will become more popular in this country because of the increasing domestic demand for raw materials by the new industries, and because of a growing market for exports; and it will become more feasible as a result of expanding irrigation works.

A diverse output is more favorable for the international economic well-being of predominantly agricultural and underdeveloped countries. It is better to depend on a variety of exports than on a single one. The effect of this would be to diminish the disadvantage incurred through sharp fluctuations in prices of agricultural and primary products for which there is inelastic demand and supply. When there is a deep fall in the prices of export commodities it always leads to the problems of foreign exchange shortage, unfavorable balance of payments and lowering of the GNP.¹² In addition to other advantages, crop diversification would increase farm income and employment.

4. Fisheries and livestock industries would increase in short-run perspective. Both domestic and overseas demands are rapidly increasing.¹³

5. The amount of forest in conservation will cover at least 40 % of the total area of this country.¹⁴

⁸One acre = 2.5 rais.

⁹National Economic Development Board, *National Economic Development Plan for 1961-1963-1966*, The Office of the Prime Minister, 1964, pp. 4-5.

¹⁰*Ibid.*

¹¹*Ibid.*

¹²Keynes: $Y_g = C + I + G + (X - M)$

¹³NEDB, *National Economic Development Plan for 1961-1963-1966*, Office of the Prime Minister, 1964, pp. 118-119.

¹⁴*Ibid.*, p. 5.

6. In 1970 hydroelectric dams could distribute their power of 1,000,000 kilowatts to industries and for public use in many provinces.¹⁵ This would give more incentive to both foreign and domestic investment and there is a good prospect of the "extractive industries" expanding, with emphasis on the use of local raw materials.

7. The combined total length of all national highways open to public use is 9,000 kilometers, of which 2,500 km. are asphalted while the rest are unpaved, narrow, and usable only in dry season. However, according to the Highway Development Program for 1963-1970, about 5,440 kilometers of substandard highway will be improved and 720 kilometers of newly constructed highways will be available.¹⁶

Naturally, it would be more favorable for economic development if Thailand had a complete network of highways connecting the various regions with each other. Better transportation facilities would reduce cost of delivery and hence reduce the cost of goods and services. Markets would also be expanded.

Economic development target 1966.

1. The rate of economic growth calculated by money GNP which now stands at 5% per annum, will be increased to 6%. In 1966 GNP will be raised to 77,000 million baht, approximately an 18% increase from 1963.¹⁷

2. In 1966 GNP per capita will be 2,400 baht (\$ 1 = baht 20) instead of 2,285 baht in 1963, in spite of a population increase of 3% per year. The rate of increase in per capita income which is now running at 2% per year will be raised to the level of 3% at least, by 1966.¹⁸

3. GCF amounted to 18% of GNP each year during 1961-1963. From 1964-1966 there is a good prospect of an increase to 19%.¹⁹

Gross national product trend.

The GNP (Gross National Product), as a universal definition advocated by Barry N. Siegel, Ph.D, Assistant Professor of Economics at the University of Utah, is "the total value of the final output of goods and services produced by residents of a country during a given period of time".²⁰ However, according to the definition of the GNP in Thailand put forward by

¹⁵ *Ibid.*, p. 6.

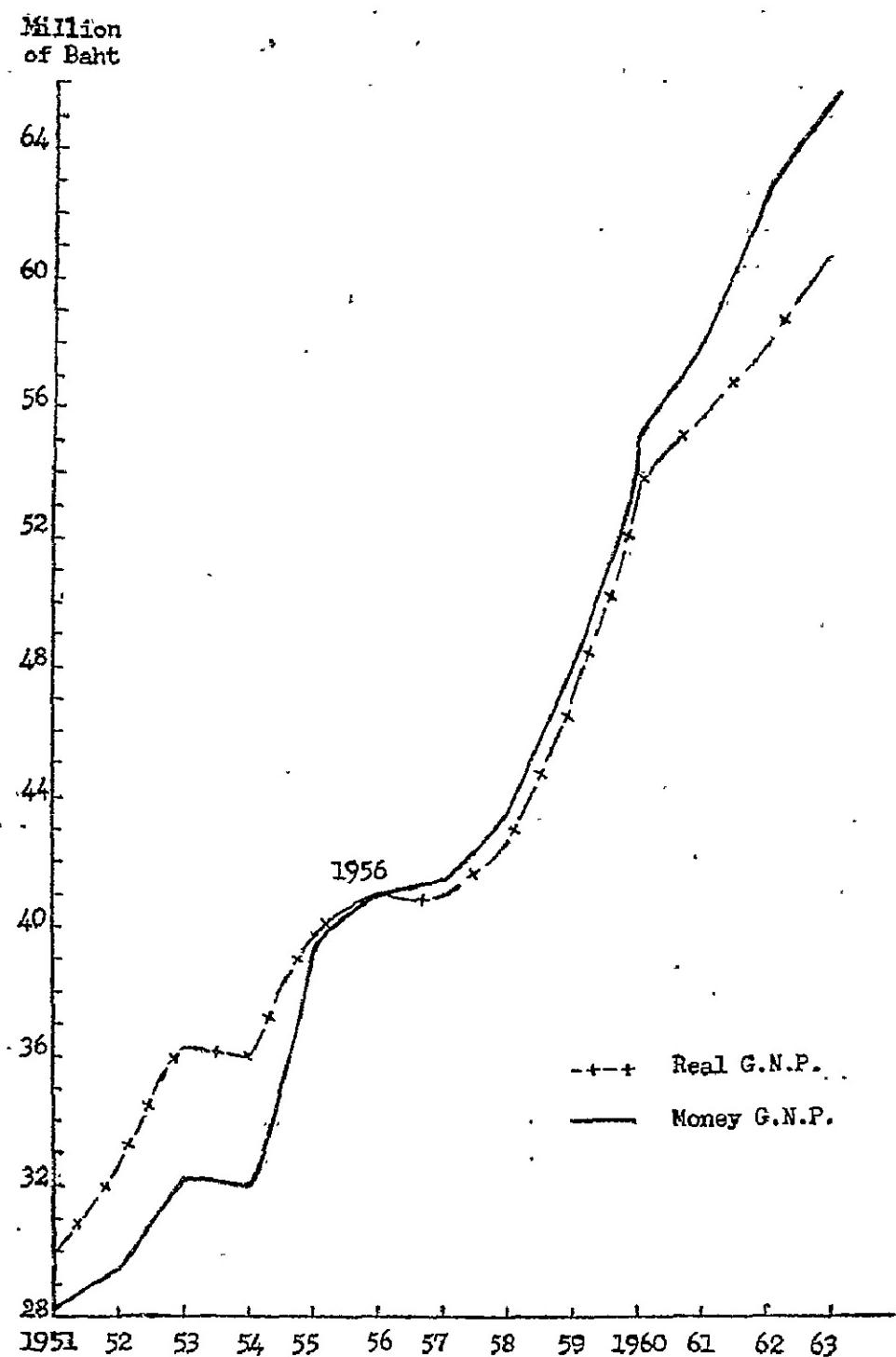
¹⁶ *Ibid.*, p. 6.

¹⁷ *Ibid.*, p. 33.

¹⁸ *Ibid.*,

¹⁹ *Ibid.*,

²⁰ Siegel, Barry N., *Aggregate Economic and Public Policy*, Richard D. Irwin Ins., Illinois, 1960.



Source: Appendix, Table 2.

Figure 1. Money G.N.P. and Real G.N.P.

the National Income Division, the Office of the National Economic Development Board of Thailand, the GNP is calculated from the GDP (Gross domestic product), to which is added the net income from abroad. The GDP consists of 11 sources of income:

1. Total agriculture
2. Mining and quarrying
3. Manufacturing
4. Construction
5. Electricity and water Supply
6. Transportation and communications
7. Wholesale and retail trade
8. Banking, insurance and real estate
9. Ownership of dwellings
10. Public administration and defense
11. Services.

TABLE 3. THE ECONOMIC GROWTH OF THAILAND 1952-1963.

Year	Wholesale Price Index		G N P		Population		Percentage growth of Real GNP per capita
	1 % increase	2 approx.	3 % increase	4 approx.	5 % increase	6 approx.	
—1 + 4—6							
1952	+ 5	—	4.71	5.0	2.95	3.0	— 3
1953	— 7	—	8.85	9.0	2.87	3.0	+ 13
1954	— 2	—	— .52	— 1.0	2.79	3.0	— 2
1955	+ 17	—	22.93	23.0	3.16	3.0	+ 3
1956	+ 3	—	4.05	4.0	3.07	3.0	— 2
1957	0	—	.14	—	2.98	3.0	— 3
1958	+ 6	—	4.67	5.0	2.89	3.0	— 4
1959	— 8	—	11.27	11.0	2.81	3.0	+ 16
1960	— 2	—	13.94	14.0	3.12	3.0	+ 13
1961	+ 10	—	5.92	6.0	3.03	3.0	— 7
1962	+ 7	—	8.07	8.0	2.94	3.0	— 2
1963	not available	—	4.34	4.0	2.85	3.0	not available

See: Appendix Table 2—GNP, Table 3 a, 3 b—Price index and Table 4—population.

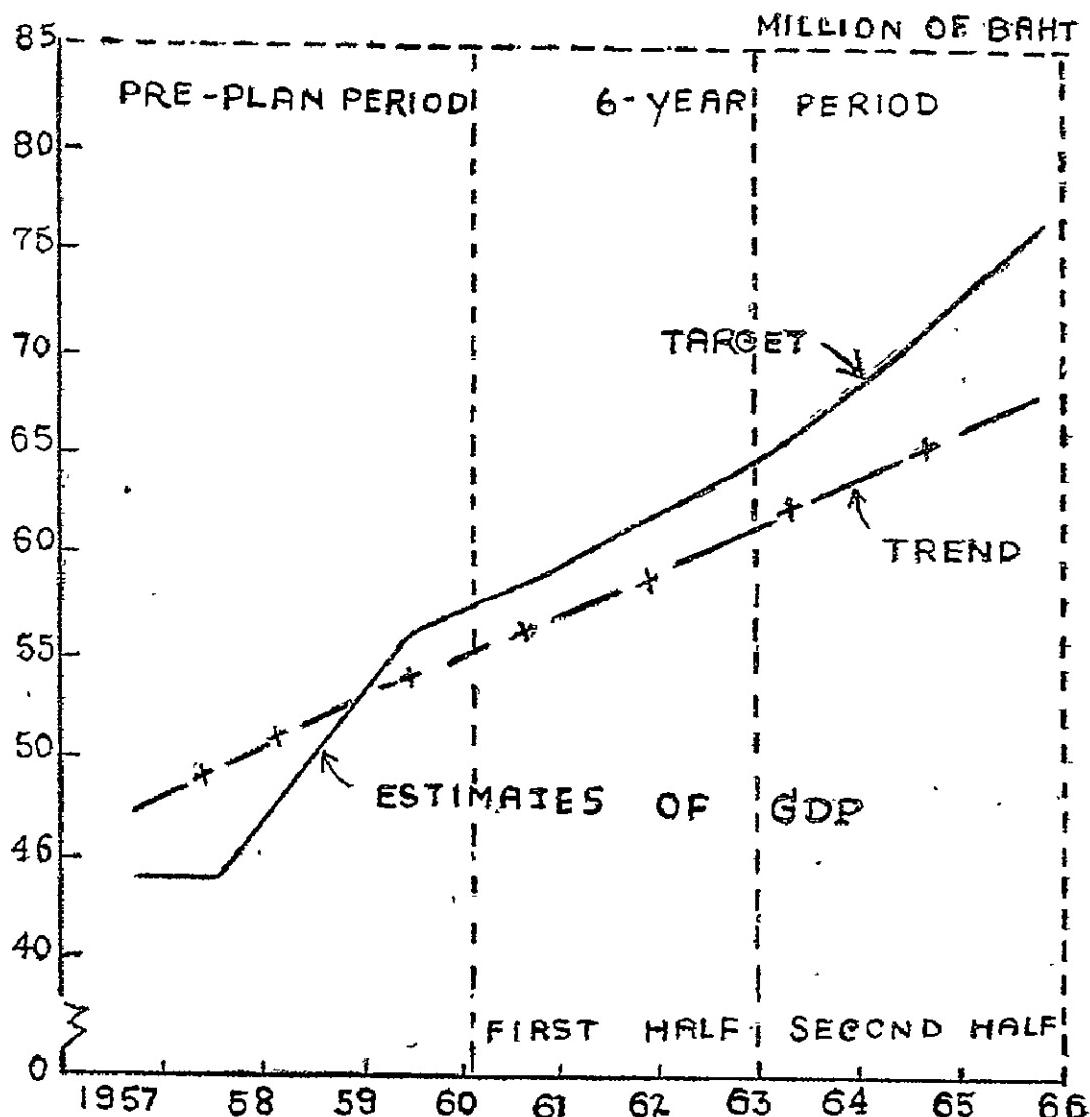
The GNP can be estimated from current prices or from constant prices. *Money GNP* is its total value calculated by *current prices* while *Real GNP* is the total value calculated by *constant prices*. For Thailand, real GNP has been computed by 1956 constant prices. Both money GNP and real GNP are needed for national economic planning. This is because

the trends of money GNP and real GNP indicate the total value of annual productivity and the movement and fluctuations of total volume of output of goods and services produced.

Fig. 1 shows the comparison between the money GNP and real GNP trends within the past 13 years, from 1951 to 1963.

Money GNP had increased rapidly from 28,219.8 million baht in 1951 to 65,795.6 million baht in 1963. At the same time the population explosion, with an annual increase of 3% from 1951-1963, enlarged the burden of the nation, and the rise in the rate of GNP hardly exceeded the rate of population growth. As a result, the annual per capita income

1957 - 1966



Source: National Economic Development Board.

Figure 2. Gross Domestic Product at 1962 Constant Prices.

did not show any significant change—it only rose from 1,390 baht in 1951 to 2,281 baht in 1963.

Real GNP showed a trend of substantial increase from 30,863.8 million baht to 62,927.8 million baht from 1958-1960 which was especially remarkable. It implied a higher productivity resulting from the beginning of economic change after the revolution in 1958.

Fig. 2 shows estimates of the GDP at 1962 prices increasing throughout the period under consideration. From 1957 to 1960 the GDP rose greatly however it did not exceed 60,000 million baht. The 6-year plan was put into effect in 1961 and during its first three years the GDP increased rapidly to 66,000 million. There is a good prospect of GDP reaching 77,000 million baht by the end of the 6-year plan in 1966.

Table 3 indicates the economic growth of Thailand within the decade from 1952 to 1962. The rate of economic growth is obtained by a comparison of three variables, consisting of the wholesale price index, the rate of population growth and the growth rate of GNP. It reveals that the 10-year average (1952-1962) of per capita economic growth was approximately 2% while the 5-year average (1958-1962) stood at around 3.2 %. This is rather a rough estimate because the wholesale price index presented is that of Bangkok-Dhonburi. Nonetheless, it is indicative of the general trend of economic growth of Thailand.

The stages of economic growth.

Generally, the level of GNP of a country indicates its economic status, just as does its economic rate of growth. A poor or underdeveloped country is one whose per capita real income is relatively low compared with that of an advanced country. There have been many definitions of an "underdeveloped" country but for this report the definition used by the group of experts appointed by the U.N. Secretary-General will be taken for the frame of reference:

"Underdeveloped countries mean countries in which per capita real incomes are low when compared with the per capita real income of the United States, Canada, Australia, and Western Europe. In this sense an adequate synonym would be poor countries".²¹

"In general, underdeveloped countries in this sense are those with per capita income less than 1/4 that of the United States."²²

"Being underdeveloped in the technical sense means nothing in terms of the level of civilization, culture, or spiritual values."²³

Average annual per capita income in Thailand during the period 1961-1963 was \$ 100 -

²¹ Higgins, Benjamin Howard, *Economic Development*, W.W. Norton & Company, New York, 1959.

²² *Ibid.*

²³ *Ibid.*

110,²⁴ compared with approximately \$ 2,000²⁵ in the U.S.A.. Thus it follows from the aforementioned definition that Thailand is an underdeveloped country. Its average annual per capita income was about one twentieth of that in the U.S.A.

Another approach in the analysis of the stages of economic growth has been introduced by W.W. Rostow, Professor of Economic History at the Massachusetts Institute of Technology. He has put forward a definition of the 5 major stages of growth, with special emphasis on the economic outlook, without direct implication of world politics, social organizations or culture. His classification lists these five stages:

1. The traditional society.
2. The pre-conditional society.
3. The take-off.
4. The drive to maturity.
5. The age of high mass-consumption.²⁶

Although each stage is defined with respect to particular criteria, it is not easy to determine which stage a country has attained, since the stages are linked together. Thus the economic condition of Thailand does not permit easy designation by any of the above categories; it is, rather, a transition from the *pre-conditional* to the *take-off* stage. In order to have a clear understanding, the classification definitions of Rostow's Pre-conditional and Take-off stages are presented.

a. Rostow's criteria of the *pre-condition for take-off*:²⁷

1. A rise in the rate of investment and of the per capita capital stock up to the point where the increase in output outstrips the rate of population increase. This probably would require a rate of investment at least 10 % of national income;
2. A high rate of investment permits the application of modern scientific knowledge such as through cost-reducing innovations and inventions.
3. Some groups in the society must be prepared to lend their money on long-term investments at high risk to back the innovating entrepreneur in modern industry;
4. A radical shift in society toward the initiation of change in productive techniques.

b. The *take-off* is described by Rostow²⁸ as requiring all three of the following related conditions:

"1. A rise in the rate of *productive investment* from, say, 5 % or less to over 10 % of national income (or net national product, NNP);

²⁴National Income Office, *Statistical Table of the 1963 Edition*, NEDB, 1963, p. 2.

²⁵The Council of Economic Advisors, *Economic Report of the President*, U.S. Government Printing Office, Washington D.C., 1962, p. 227.

²⁶Rostow, W.W., *The Stages of Economic Growth*, Cambridge, 1960, pp. 4 - 10.

²⁷*Ibid*, p. 20.

²⁸*Ibid*, p. 20.

2. The development of *one or more* substantial manufacturing sectors,²⁹ with a high rate of growth;
3. The existence or quick emergence of a political, social, and institutional framework which exploits the impulses to expansion in the modern sector and the potential external economic effects of the *take-off* and gives to growth an on-going character."

According to the above definitions, it is still too early to place Thailand in the *take-off* period because "the development of *one or more* manufacturing sectors, with a high rate of growth" has not yet taken place in this country, even with the GCF/GNP standing at 18% in 1963. Nevertheless, there is a good prospect of it entering the *take-off* period fairly soon after the completion of the irrigation projects by 1970. The irrigation dams would then be at full productive capacity to provide irrigation and hydroelectricity for agriculture and manufacturing, respectively. Thus modern technology would be applied to both sectors, and the potential for moving into the *take-off* stage would be strong.

DEMAND FOR MANPOWER

Estimate of the demand for manpower.

The demand for manpower was prepared by a working group from various departments concerned, for the Joint Thai-USOM Human Resources Study, 1963. The demand estimates of the 6-year and 20-year intervals, ending in 1966 and in 1980, are shown—1966 has been chosen because it covers the end of the present 6-year plan, and is the farthest year for which economic projections by sectors exist; 1980 is taken because it is the final year of a careful estimate of Thailand's future population and labor force.

The simple annual averages are, accordingly, the demands that correspond to the mid-years in the periods 1963 and 1970, respectively.

²⁹Manufacturing sectors: In this context "manufacturing" is taken to include the processing of agricultural products or raw material by modern methods.

The demand estimates presented are rough and the ability to fulfill demand has not been studied. However, the whole concept of demand is to a great extent reliable even if an improvement of the demand estimation is required in the future. The demand estimates of various levels of education are based upon two assumptions. These are the minimum and the upgraded educational level of population. The upgrading assumption is that the current proportion of the population completing each level of education shall be increased 2% per year from 1960 attainments, while the minimum assumption is based on 1960 attainments. This is because one of them may give man unreliable picture of educational needs, whilst taken together they will be more reliable and comprehensive.

Demand for graduates under alternative assumptions.

The estimates of future demand for manpower are based on different alternative assumptions. The alternatives concentrate on demography, occupations, and certain occupations in selected economic sectors. In this report three kinds of demand estimates are presented:

1. Demographic demand
2. Occupational demand
3. Economic Sector demand

The demographic demand.

a. **Enrollment ratio constant.** The first method for projecting educational demand assumes that the current proportions of the population enrolled in the various levels of the educational system remain constant in the future. No allowance is made for structural change in the economy or for changing social demands.

Population projections are based upon a careful study, "Population Perspectives of Thailand", by Ajit Das Gupta.³

TABLE 4. DEMOGRAPHIC DEMAND : ENROLLMENT RATIO CONSTANT.

Year	Grade 12	Grade 7	Grade 4
1960 - 1966	20,000	113,700	668,000
1960 - 1980	29,000	143,000	819,000

Source: The Joint Thai-USOM Human Resources Study, 1963.

³⁰ The Joint Thai-USOM Human Resources study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 99.

TABLE 4. DEMOGRAPHIC DEMAND : EDUCATIONAL ATTAINMENT LEVELS,
CONSTANT AND UPGRADED.

	% With grade 12	Grade 12 graduates	% With grade 7	Grade 7 graduates	% with grade 4	Grade 4 graduates
a. 1966, with 1960 Educational Attainment						
1. 1966 Population (11 years and over)	.87	186,267	5.85	1,252,485	51.4	11,004,740
2. 1960 Population (11 years and over)	.87	150,206	5.85	1,010,009	51.4	8,874,270
3. Net additions 1960-1966 (1-2)	—	36,061	—	242,476	—	2,130,470
4. Outflows (5.264 % of line 2)	—	7,907	—	53,167	—	467,142
5. Gross additions (3 + 4)	—	43,968	—	295,643	—	2,597,162
6. Average (1968) Annual Demand (line 5 ÷ 6 years)	—	<u>7,328</u>	—	<u>49,274</u>	—	<u>432,935</u>
b. 1980, with 1960 Educational Attainment						
1. 1980 Population (11 years and over)	.87	269,700	5.85	1,813,500	51.4	15,934,000
2. 1960 population (11 years and over)	.87	150,206	5.35	1,010,009	51.4	8,874,270
3. Net additions 1960-1980 (1-2)	—	119,494	—	803,491	—	7,059,730
4. Outflows (19.63% of line 2)	—	29,485	—	198,265	—	1,742,019
5. Gross additions (3 + 4)	—	148,979	—	1,001,756	—	8,801,749
6. Average (1970) Annual Demand (line 5 ÷ 20 years)	—	<u>7,449</u>	—	<u>50,088</u>	—	<u>440,087</u>
c. 1980 with 1960 Bangkok-Dhonburi Educational Attainment						
1. 1980 population (11 years and over)	5.31	1,646,100	18.80	5,828,000	59.0	18,290,000
2. 1960 Population (11 years and over)	.87	150,206	5.85	1,010,009	51.4	8,874,270
3. Net additions 1960-1980 (1-2)	—	1,495,894	—	4,817,991	—	9,415,730
4. Outflows (19.63% of line 2)	—	29,485	—	198,265	—	1,742,019
5. Gross additions (3 + 4)	—	1,525,379	—	5,016,256	—	11,157,749
6. Average (1970) Annual Demand (line 5 ÷ 20 years)	—	<u>76,269</u>	—	<u>250,813</u>	—	<u>557,887</u>

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 100.

b. Constant attainment fraction. The percentage of educational achievement of the present population, obtained from the 1960 census remains, constant in the future. According to this assumption, the stock of manpower varies proportionally with population growth.

The small amount of net immigration was ignored. With reference to notation in table 5, "outflows" refers to the deaths of those in the population 11 years and over during the 6-year interval. The deaths for 1960 to 1966 were estimated at 909,000, or 5.264% of the population 11 years and over in 1960; while those for 1960-1980 were 3,389,000 or 19.63% of population 11 years and over³¹. (see Table 5)

c. Attainment upgraded to 1960 Bangkok-Dhonburi average. This demand estimate is based on the assumption that the amount of educational attainment will keep up with population growth and at the same time the educational attainment level of the nation by 1980 must be improved to the 1960 level of Bangkok-Dhonburi. The estimate thus requires that a greater percentage of those eligible by age remain in schools instead of dropping out, and thus a greater percentage of the population will attain higher educational levels than at present. The demand is supposed to shift toward the higher level attainments. see Table 5.

To sum up: The first two assumptions of the demographic demand attempted to estimate what average demand for manpower must occur if Thailand wants to keep up the same rate of educational enrollment and attainment at each level, with an increasing population.

The final assumption attempts to deal with the same thing as the first two mentioned, but in this case the levels of educational attainment are taken to be upgrade by 1980 to the 1960 Bangkok-Dhonburi average.

Economic occupational demand.

Economic Occupational Demand refers to the average annual educational output of manpower which would be required for the future occupational distribution of the labor force, assuming the level of educational attainments to remain constant. (See Table 6).

The upgrading assumption answers the same question under the conditions of a 2% per year improvement in educational attainment. (See Table 7).

Occupational demand in selected sectors.

Unlike the foregoing estimates in which the variable under consideration was the demand for manpower from the entire population, the following series of demand estimates provide means of determining the manpower needed in certain occupations of selected sectors of the economy, such as in manufacturing, trade and finance, transportation, etc. (See Table 8 and 9)

³¹ The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 95.

TABLE 6. ECONOMIC OCCUPATIONAL DEMAND (1960 - 1980) MINMIUM ESTIMATE

	Total	% with Grade 12	Grade 12 Graduates	% with Grade 7	Grade 7 Graduates
1. Agriculture, Forestry, Hunting and Fishing	16,690,000	.54	89,586	6.00	995,400
2. Professional Technical and related workers	568,800	53.00	301,464	77.00	437,976
3. Admi., Exec. & Managerial workers	85,320	46.00	39,247	64.09	54,605
4. Clerical workers	511,920	28.00	143,338	68.00	348,106
5. Sales workers	2,023,460	1.70	34,569	13.50	274,517
6. Miners, quarrymen and related workers	85,320	7.40	6,314	23.50	20,050
7. Workers in Transport & Communication occupation	426,600	2.00	8,522	17.00	72,522
8. Craftsmon, Production workers	2,403,180	1.30	31,241	9.00	126,286
9. Service, Sport & Recreation workers	783,100	2.00	15,642	9.00	70,389
10. Not Elsewhere classified	213,300	2.80	5,972	25.00	53,325
11. Non-Agriculture Labor Force (2-10)	7,110,000	—	586,319	—	1,457,776
12. 1980 Labor Force (1 + 11)	23,700,000	2.85	675,905	10.35	2,453,176
13. 1960 Labo Force	13,836,984	0.87	120,332	5.85	809,464
14. Net Additions 1960-1980 (12-13)	—	—	555,523	—	1,643,712
15. 1960 Population (11 years and over)	17,256,117	0.87	150,206	5.85	1,010,009
16. 1980 Non-Econ. Active (11 years and over)	7,400,000	2.85	210,900	10.35	765,900
17. 1960 Non-Econ. Actlve (11 years and over)	3,428,133	0.87	29,885	5.35	200,546
18. Net Additions, Non-Econ. Active 1950-1980 (16-17)	—	—	181,075	—	565,354
19. Outflow, 11 years and over (19.63 % of 15)	—	—	29,485	—	198,265
20. Demand 1960-1980 (14 + 18 + 19)	—	—	766,083	—	2,407,331
21. Average (1970) Annual Demand (line 20÷20 years)	—	—	38,304	—	120,367

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 104.

TABLE 7. ECONOMIC OCCUPATIONAL DEMAND FOR 1960 - 1980 GRADUATE,
UPGRADED ESTIMATE.

	Total	% with Grade / 2 Graduates	Grade 12 Graduates	% with Grade 7	Grade 7 Graduates
1. Agriculture, Forestry, Hunting and Fishing	16,590,000	.802	133,052	8.916	1,479,164
2. Professional, Technical and related workers	568,800	78.758	447,975	100.00	568,800
3. Admin., Exec., & Managerial workers	85,320	68.356	58,321	95.104	81,143
4. Clerical workers	511,920	41.608	213,000	100.00	511,920
5. Sales workers	2,033,460	2.526	51,365	20.061	407,932
6. Miners, quarrymen and related workers	85,320	10.996	9,382	34.921	29,795
7. Workers in transport and Communication Occupation	426,600	2.972	12,678	25.262	107,768
8. Craftsmen, Production workers	2,403,180	1.932	46,429	13.374	321,401
9. Service, Sport & Recreation workers	782,100	2.972	23,244	13.374	104,598
10. Not elsewhere classified workers	213,300	4.161	8,875	37.150	79,241
11. Non-Agriculture Labor Force (2....10)	7,110,000	—	871,269	—	2,212,598
12. 1980 Labor Force (1+11)	23,700,000	4.238	1,004,321	15.577	3,691,762
13. 1960 Labor Force	13,836,984	.870	120,382	5.85	809,464
14. Net Additions 1960-1980 (12 — 13)	—	—	883,939	—	2,882,298
15. 1960 Population (11 years and over)	17,265,117	.870	150,206	5.85	1,010,009
16. 1980 Non-Econ. Active (11 years and over)	7,400,000	4.238	313,612	15.577	1,152,698
17. 1960 Non-Econ. Active (11 years and over)	3,428,133	.870	29,825	5.85	200,546
18. Net Addition, Non-Econ. Active 1960-1980 (16—17)	—	—	283,787	—	952,152
19. Outflows, 11 years and (19.63 % of 15)	—	—	29,485	—	198,265
20. Demand 1960-1980 (14+18+19)	—	—	1,197,211	—	4,032,715
21. Average (1970) Annual Demand (line 20 ÷ 20 yrs)	—	—	59,861	—	201,636

Remark: The annual educational attainment was upgraded by 2 % per year from 1960 attainments.

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 105.

TABLE 8. ECONOMIC SECTOR DEMAND FOR 1960-1966, MINIMUM ESTIMATES.

	Total	% with Grade 12 Grade 12 Graduates	% with Grade 7 Grade 7 Graduates	% with Grade 4 Grade 4 Graduates
1. Agriculture, Forestry, Hunting & Fishing	12,840,657	.54	69,339	5.90
2. Mining and Quarrying	35,763	1.50	536	9.50
3. Manufacturing	658,196	1.50	9,872	9.50
4. Construction	177,550	4.50	7,989	15.30
5. Electricity, Water Supply & Sanitary	31,983	10.50	3,358	32.00
6. Commerce	993,038	1.70	16,881	17.50
7. Transport, Storage & Communication	264,289	.53	1,400	3.05
8. Services	888,150	16.20	143,800	40.00
9. Others (Unclassified)	730,374	0.94	6,866	8.40
10. 1966 Labor Force (1 through 9)	16,620,000	1.565	260,121	8.78
11. 1960 Labor Force	13,836,984	0.87	120,382	5.85
12. Net additions to L/F 1960-1966 (10-11)	—	—	139,739	—
13. 1966 Non-Econ. Active (11 years and over)	4,810,000	1.565	75,276	8.78
14. 1960 Non-Econ. Active	3,428,133	0.87	29,824	5.85
15. Net additions 1960-1966 Non-Econ. Active (13-14)	—	—	45,452	—
16. 1960 Population (11 years and over)	17,265,117	0.87	150,206	5.85
17. Outflows, 11 years and over (5.264 % of line 16)	—	—	7,907	—
18. Gross Demand (12+15+17)	—	—	193,098	—
19. Average Annual Demand (line 18÷6 years)	—	—	32,183	—
			—	154,141
			—	621,707

Source: The Joint Thai-USOM Human Resources Study, Preliminary Assessment of Education and Human Resources in Thailand, USOM, Bangkok, 1968, p. 109.

TABLE 9. ECONOMIC SECTOR DEMAND FOR 1960-1966, UPGRADED ESTIMATE.

	Total	% with Grade 12	Grade 12 Graduates	% with Grade 7	Grade 7 Graduates	% with Grade 4	Grade 4 Graduates
1. Agriculture, Forestry, Hunting & Fishing	12,840,657	0.6081	78,084	6.6446	853,210	63.0672	8,098,243
2. Mining & Quarrying	35,763	1.6893	604	10.6989	3,826	63.0672	22,555
3. Manufacturing	658,196	1.6893	11,119	10.6989	70,420	63.0672	415,106
4. Construction	177,550	5.0679	8,998	17.2309	30,593	66.4458	117,975
5. Electricity, Water Supply and Sanitary	31,983	11.8251	3,782	36.0384	11,526	91.2222	29,176
6. Commerce	993,038	1.9145	19,012	19.7085	195,713	54.0576	536,813
7. Transport, Storage and Communication	264,289	0.5969	1,578	3.4349	9,078	85.5912	226,208
8. Services	888,150	18.2444	162,038	45.0480	40,009	85.5912	760,178
9. Others (unclassified)	730,374	1.0586	7,732	9.4600	69,093	54.0576	394,823
10. 1966 Labor Force (1 through 9)	16,620,000	1.7626	292,947	7.7224	1,283,468	63.7851	10,601,077
11. 1960 Labor Force	13,836,984	0.8700	120,382	5.8500	809,464	51.4000	7,112,210
12. Net addition to L/F 1960-1966 (10—11)	—	—	172,565	—	474,004	—	3,488,867
13. 1966 Non-Econ. Active (11 years and over)	4,810,000	1.7626	84,781	7.7224	371,447	63.7851	3,068(063)
14. 1960 Non-Econ. Active	3,428,133	0.8700	29,824	5.8500	200,546	51.4000	1,762,060
15. Net addition 1960-1966, Non-Econ. Active (13—14)	—	—	54,957	—	170,901	—	1,306,003
16. 1960 Population (11 years and over)	17,265,117	0.8700	150,206	5.8500	1,010,009	51.4000	8,874,270
17. Outflows, 11 years and over (5.264 of line 16)	—	—	7,907	—	53,167	—	467,142
18. Gross Demand (12+15+17)	—	—	235,429	—	698,072	—	5,262,012
19. Average Annual Demand (line 18÷6 years 1963)	—	—	39,238	—	116,345	—	877,002

Remark : The annual educational attainment was up-graded by 2 % per year from 1960 attainments.

Sources: The Joint Thai USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1962, p. 110.

SUPPLY OF MANPOWER

The supply of manpower will be affected in the future by the size, rate of growth, age-composition and geographical distribution of the population. Trends in the population size have been shown in the projections of Halvor Gille and Thip Chalothorn prepared for the National Seminar on Population of Thailand in November 1963.³²

The results of the four projection estimates of the total population of Thailand indicate that the population will continue to increase rapidly from 27 million in 1960 to 48-54 million in 1980.³³ The highest estimate of 54.3 million is provided by Projection III (assuming constant fertility and a rapid mortality decline) and the lowest, of 48.5 million, by Projection II (assuming fertility decline and moderate mortality decline).

A few years ago the United Nations prepared population projections which suggested a 1980 population for Thailand of around 41.6 million, which is far below even Projection II.

The present rate of population growth, estimated to be around 3.2 per cent per annum, will increase further if the birth rate does not change. By 1975-1980 it will be at the extraordinarily high level of 3.6 to 3.7 per cent per annum.³⁴

Labor force.

The "labor force" is similar to the "economically active population", but not exactly the same because it sometimes differs in number. (See Table 6).

A definition of the "economically active population" would simplify the approach to the general concept of "labor force". The definition given by the Central Statistical Office, National Economic Development Board, is as follows:

"All persons 11 years of age and over were asked whether they 'worked' on the census day or on any day during the days preceding the census date, but 'worked' was not defined. Persons who worked are counted as employed, as are persons who had a job but did not work because they were on vacation or were sick. Persons who did not work were asked whether they were looking for work, and if they were looking for work they were classified as experienced workers, or, if they had never worked, as new workers."³⁵

Within a twenty-year period, the labor force of Thailand will increase from 13.8 million in 1960 to 24.9 million in 1980.³²

A lower percentage of young persons and also of women in the labor force is expected to exist in the future, which would have the effect of preventing the labor force from increasing as rapidly as the population.

At the same time, any change in the level of fertility will hardly affect the size of the labor force in the short-run. This is shown by the fact that a fertility decline, as assumed

³² See: Appendix Table 1_a, 1_b, 1_c, and 1_d,

³³ *Ibid.*

³⁴ Gille, Halvor, and Chalothorn, Thip, *The Demographic Outlook of Thailand and Some Implications*, National Research Council, 1963, p. 9.

³⁵ Central Statistical Office, *Thailand Population Census 1960*; NEDB, 1962.

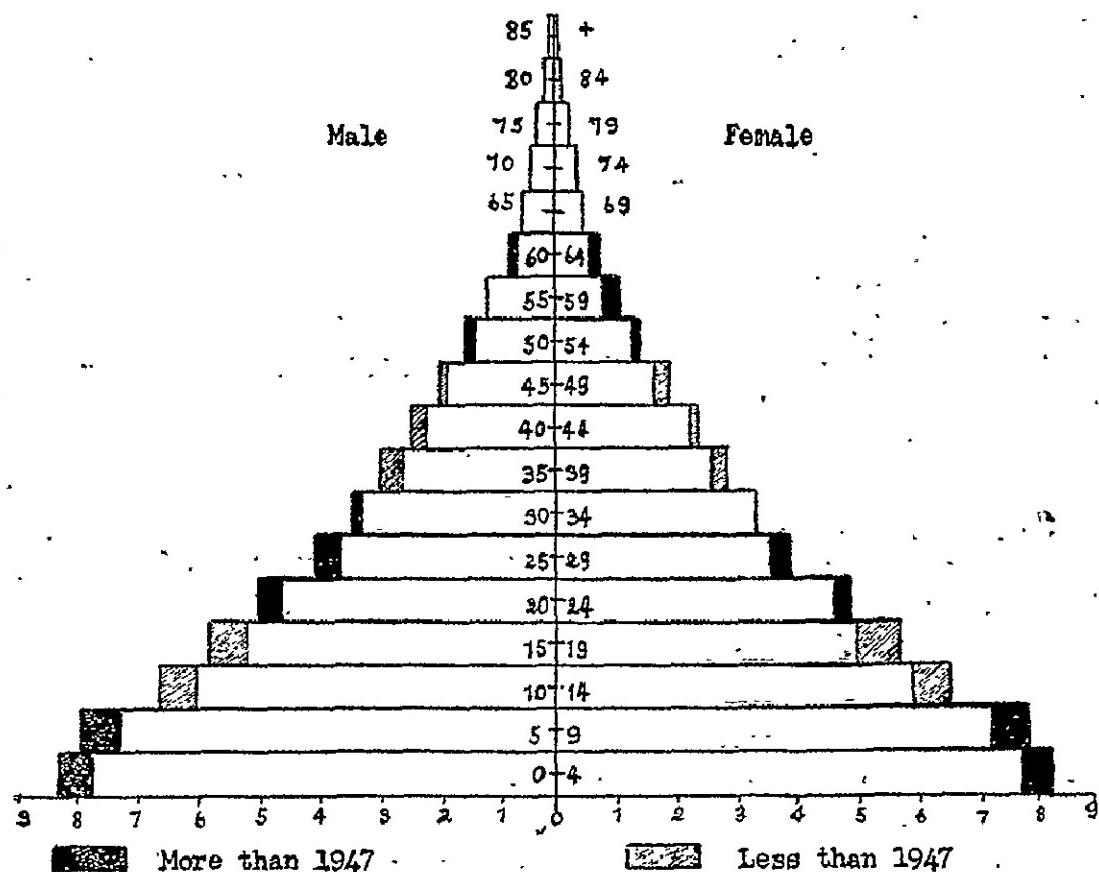
³⁶ Gille, Halvor, and Chalothorn, Thip, *The Demographic Outlook of Thailand and Some Implications*, National Research Council, 1963, p. 14.

in Projection II, beginning in 1965 will by 1980 reduce the labor force by less than 90,000 workers out of a total working force of around 25 million.³⁷

In 1960, 51 per cent of the total population was in the labor force. This would decline to 46.8% by 1980 with the annual population increase remaining at its present high level. This would increase the burden of the economically active population very substantially.

Moreover, the future growth of the labor force will be mainly in urban areas owing to the expected heavy migration from country to town. Also, the male labor force in such areas would triple by 1980 whilst the female would only double.³⁸

Like other underdeveloped countries, Thailand has a pyramid shaped population graph (See Fig. 3). It implies that there will be a high percentage of economically non-active



Source: National Statistical Office.

Figure 3. Population by Sex and Age Group, Census Years 1947 and 1960.

Source: National Statistical Office.

Figure 3. Population by Sex and Age Group, Census years 1947 and 1960.

³⁷ *Ibid.*, p. 14.

³⁸ *Ibid.*, p. 14.

population representing a big burden to the economically active. This is because of a large number of child population and old-age group.

One thing the writer would like to recommend is the extension of the age of retirement to 65 from 60, if this is supported by better nutrition and health of the entire population which would improve the ability of this section to work. The advantages of this for the Government would become clear, especially in the case of officials and civil servants, whose later retirement would diminish the amount of money paid out in pension; and also the total expenditure as a whole.

In Scandinavian countries the old-age pensioners have become a big burden for social and economic development. If some of them could work productively it would reduce the load of the economically active population and would facilitate economic and social progress.

The future supply of manpower at various educational levels.

The future supply of manpower as presented in this report is a kind of rough estimate calculated from several projections, most of which were taken from data of the Thai-USOM Human Resources Study. The supply at each educational level (grades 4, 7, 10 and 12) is calculated for two periods; 1962-1970 and 1971-1980, inclusive. The average supply of manpower indicates what the educational output is expected to be, and this can be compared to what the demand in the two periods mentioned above will be. The supply of manpower at the various educational levels is determined by the reduction of enrollments between grades 4 and 5, 7 and 8, 10 and 11, and 12 and university enrollments. In other words, the manpower supply represents those who leave schools after graduation from grades 4, 7, 10 and 12. Thus, any change in enrollment between grades 4 and 5 is assumed to constitute the supply of persons entering the labor force with a 4th grade education and the same procedure applies for the other levels.

I. The supply of manpower at the 4th grade level.

The estimate of manpower supply at the 4th grade level is calculated from Projection IV³⁹ which predicts primary school enrollment in Grade 4 and from the 18-year program⁴⁰ of future enrollment in which Grade 5 enrollments are predicted. Both of them are prepared by Weesakul in *Analysis and Interpretation of Educational Statistics and Enrolment Projection*.

³⁹ Projection IV is based on the assumption that the examination pass rate of all grades of primary schools are improved until 1965 and after that remain stable at 70, 85, 90, and 95 percent for Grades 1, 2, 3, and 4 respectively until 1975.

⁴⁰ The 18-year program is based on the assumption of a 49,700-student annual increase in Grade 5. The expected enrollment in Grade 5 is the basis for calculation of 6 and 7 enrolments, which will comprise 92 percent of Grade 5 and 94 per cent of Grade 6, respectively.

Projection IV is chosen for the computation because Weesakul said that it is likely to be the real situation in the next 10 years while the 18-year program is the farheat estimates to 1980. The supply of manpower in the 4th grade level is simply determined by the numerical diffrence between student enrollment in Grade 4 and 5. The 9-year average and 10-year average of manpower supply, ending 1970 and 1980 respectively, represent what would be the future educational output of manpower per year. coresponding to the future demand of manpower during 1962-1980. (See Table 10).

TABLE 10. THE SUPPLY OF MANPOWER IN 4th GRADE LEVEL.

Year	(1) Grade 4 (Projection IV)	(2) Grade 5 18 Year Program	(3) The Supply of man- power in the 4th Grade Level.
1962	684,000	135,000	549,000
1963	751,000	184,700	566,300
1964	805,000	234,400	570,600
1965	828,000	284,100	543,900
1966	833,000	333,800	499,200
1967	826,000	383,500	442,500
1968	837,000	433,200	393,800
1969	862,000	482,900	379,100
1970	887,000	532,600	354,400
9-year average 1962-1970	<u>812,556</u>	<u>333,800</u>	<u>477,644</u> (4)
1971	915,700	582,300	333,400
1972	944,300	632,000	312,300
1973	972,600	681,700	290,900
1974	1,000,500	731,400	269,100
1975	1,028,700	781,100	247,600
1976	1,057,000	830,800	226,200
1977	1,085,600	880,500	205,100
1978	1,114,000	930,200	183,800
1979	1,143,000	979,900	163,100
1980	1,172,400	1,029,600	142,800
10-year average 1971-1980	<u>1,043,380</u>	<u>805,950</u>	<u>237,430</u> (5)

Source: (1) see-----Appendix Table 6

(2) see-----Appendix Table 7

(3) = (1) — (2)

(4) = 9-year average of (3) (1962-1970)

(5) = 10-year average of (3) (1971-1980)..

2: The supply of manpower at the 7th grade level

The total supply of manpower at the 7th grade level is computed from the 18-year program of Grade 7, and from the expected enrollment of Grade 8, in Projection II.⁴¹ As explained above, the supply is those who leave schools after graduation from Grade 7. Thus, the computation supply amounts to determining the difference between the number of students in Grade 8 and in Grade 7. Like the supply of manpower in 4th grade level, the average outputs of manpower provided, represent the average annual supply of manpower during the 9-year and 10-year intervals, ending at 1970 and 1980 respectively, which respond to the average demand in the same period of time. (See Table 11).

TABLE 11. THE SUPPLY OF MANPOWER IN 7th GRADE LEVEL.

Year	(1) Grade 7 18 Year Program	(2) Grade 8 Projection II	(3) The Supply of man- power in the 7th Grade Level.
1962	113,000	109,577	3,423
1963	112,800	120,816	8,016
1964	120,600	138,893	18,293
1965	159,700	164,157	4,457
1966	202,700	183,385	19,315
1967	245,700	205,304	40,396
1968	288,700	225,207	63,493
1969	331,600	240,346	91,254
1970	374,600	255,639	118,961
9-Year average 1962-1970	<u>216,600</u>	<u>182,592</u>	<u>34,008</u> (4)
1971	417,600	273,134	144,466
1972	460,600	292,608	167,992
1973	503,600	313,579	190,021
1974	546,500	335,658	211,142
1975	589,600	358,580	231,020
1976	632,500	382,475	250,025
1977	675,500	407,035	268,465
1978	718,400	432,449	285,951
1979	761,500	458,573	302,927
1980	804,500	485,567	318,933
10-Year average 1971-1980	<u>606,630</u>	<u>370,666</u>	<u>238,094</u> (5)

Source: (1) see-----Appendix Table 7

(2) see-----Appendix Table 8

(3) = (1) - (2)

⁴¹Projection II The students' enrollment in grade 8 is assumed to increase in 1962 by 19 per cent over that in 1961, and thereafter to increase additionally by 1.21 percent annually.

3. The supply of manpower at 10th grade level.

The estimates of manpower supply at the 10th grade level are derived as explained above with respect to other grade levels. The numbers of students in both grades are obtained from the expected enrollment in Projection II. The 9-year average of manpower supply during 1962-1970 and the 10-year average during 1971-1980 are presented. (see table 12).

TABLE 12. THE SUPPLY OF MANPOWER IN 10th GRADE LEVEL.

Year	(1) Grade 10 Projection II	(2) Grade 11 Projection II	(3) Supply of Man- power in 10th Grade Level
1962	71,685	25,268	46,417
1963	82,443	27,240	55,203
1964	95,556	31,328	64,228
1965	106,497	36,311	70,186
1966	121,555	40,469	81,086
1967	142,669	46,191	96,478
1968	161,091	54,214	106,877
1969	180,593	61,215	119,378
1970	199,019	68,625	130,394
9-year average			
1962-1970	<u>129,012</u>	43,429	85,583
1971	213,864	75,627	138,237
1972	227,920	81,268	146,652
1973	243,352	86,610	156,742
1974	260,511	92,474	168,037
1975	279,125	98,994	180,131
1976	298,847	106,068	192,779
1977	319,410	113,562	205,848
1978	340,842	121,376	219,466
1979	362,943	129,520	233,423
1980	385,790	137,918	247,872
10-year average			
1971-1980	<u>293,260</u>	<u>104,341</u>	<u>188,919</u>

Source: (1) see-----Appendix Table 8.

(2) see-----Appendix Table 8.

(3) = (1) + (2).

4. The supply of manpower at 12th grade level.

The estimate of manpower supply at the 12th grade level is computed from the projection of enrollment in Grade 12 and from the university enrollment projections. The 8-year average supply during 1963-1970 as well as the 10-year average supply during 1971-1980 represent the annual educational outputs of manpower which would be available during both intervals. (See Table 13).

TABLE 13. THE SUPPLY OF MANPOWER IN 12th GRADE LEVEL

Year	(1) Grade 12 Projection II	(2) University Enrollment Projection	(3) Supply of Man- power in 12th grade level
1962	14,840	—	—
1963	15,998	2,517	13,481
1964	18,399	2,725	15,674
1965	21,326	2,948	18,378
1966	23,768	3,169	20,599
1967	27,128	3,393	23,735
1968	31,825	3,614	28,211
1969	35,952	3,838	32,114
1970	40,304	4,057	36,247
9-year average 1962-1970	<u>25,504</u>	<u>3,283</u>	<u>23,555</u>
1971	44,416	4,282	40,134
1972	47,726	4,505	43,221
1973	50,866	4,724	46,142
1974	54,310	4,947	49,363
1975	58,139	5,170	52,960
1976	62,294	5,385	56,909
1977	66,695	5,615	61,080
1978	71,284	5,836	65,448
1979	76,067	6,060	70,007
1980	80,999	6,281	74,718
10-year average 1970-1980	<u>61,280</u>	<u>5,281</u>	<u>56,000</u>

Source: (1) see-----Appendix Table 8

(2) see-----Appendix Table 9

(3) = (1) — (2)

THE COMPARISON OF SUPPLY AND DEMAND FOR MANPOWER

I. Grade 4

a. Average supply and demographic demand for manpower, 1962-70 and 1971-80.

During 1962-1970, the average supply of manpower with a grade 4 education would exceed the average demand by approximately 41,530 persons per annum—say in round figures of 40,000. This deficiency in demand would result in problems of unemployment or underemployment or both to the extent of this number of people. However, this would be

TABLE 14. THE DEMAND AND SUPPLY OF MANPOWER IN 4th GRADE LEVEL.

Year	(1) Supply of Manpower	(2) Demographic Demand for Manpower	(3) Excess or Deficit Supply
1962	549,000	432,935	+ 116,065
1963	566,300	432,935	+ 133,365
1964	570,600	432,935	+ 137,665
1965	543,900	432,935	+ 110,965
1966	499,200	432,935	+ 66,265
1967	442,500	440,087	+ 2,413
1968	393,800	440,087	- 46,280
1969	379,100	440,087	- 60,987
1970	354,400	440,087	- 85,687
9-year average 1962-1970	<u>477,644</u>	<u>436,114</u>	+ <u>41,530</u>
1971	333,400	440,087	- 106,687
1972	312,300	440,087	- 127,787
1973	290,900	440,087	- 149,187
1974	269,100	440,087	- 170,987
1975	247,600	440,087	- 192,487
1976	226,200	440,087	- 213,887
1977	205,100	440,087	- 234,987
1978	183,800	440,087	- 256,287
1979	163,100	440,087	- 276,987
1980	142,800	440,087	- 297,287
10-year average 1971-1980)	<u>237,432</u>	<u>440,087</u>	- <u>202,655</u>

Source: (1) Calculated from Appendix Table 6 and 7.

(2) The Joint Thai-USOM Human Resources study, p. 100.

(3) = (1) - (2)

a small number compared to the total population or even to the total labor supply. The problems involved would be small provided there was no undue concentration of the surplus in one area or industry.

On the other hand the situation in the ten year period, 1971-1980 will be reversed. That is, there will be an average annual deficit in supply of about 202,655 people. This great change will be brought about by the gradual implementation of compulsory education through Grade 7, as planned according to the National Scheme of Education, 1960.

However, the effect of this apparent deficit of manpower with 4th grade education probably will be compensated for by the relative surplus of 7th grade graduates. (See Table 14)

TABLE 15. THE DEMAND AND SUPPLY OF MANPOWER IN 4th GRADE LEVEL

Year	(1) Supply of Manpower	(2) Demographic Demand Up-graded to 1960 Bangkok-Dhonburi Average	(3) Excess or Deficit Supply
1962	549,000	557,887	- 8,877
1963	566,300	557,887	8,413
1964	570,600	557,887	12,713
1965	543,900	557,887	13,989
1966	499,200	557,887	58,687
1967	442,500	557,887	115,387
1968	393,800	557,887	164,087
1969	379,100	557,887	178,787
1970	345,400	557,887	208,487
9-year average			
1962-1970	<u>477,644</u>	<u>557,887</u>	- <u>80,243</u>
1971	333,400	557,887	224,487
1972	312,300	557,887	245,587
1973	290,900	557,887	266,987
1974	269,100	557,887	288,787
1975	247,600	557,887	310,287
1976	226,200	557,887	331,687
1977	205,100	557,887	352,787
1978	183,800	557,887	374,087
1979	163,100	557,887	394,787
1980	142,800	557,887	415,087
10-year average			
1971-1980	<u>237,432</u>	<u>557,887</u>	- <u>320,455</u>

Source: (1) Calculated from Appendix Table 6 and 7.

(2) The Joint Thai-USOM Human Resources Study, p. 100.

(3) = (1) - (2)

b. Average supply and demographic demand up-graded to 1960 Bangkok-Dhonburi level 1962-1970 and 1971-1980.

During 1962-1970 the economy would be faced with the problem of a manpower shortage at the 4th grade educational level of 80,000 persons per year.

Then from 1971-1980 this shortage would become more serious rising to 320,455 people per year. Again, as under the previous demand assumptions, the deficiency of manpower resources with 4th grade education would be a result of the implementation of compulsory education through Grade 7 (See Table 15).

TABLE 16. THE DEMAND AND SUPPLY OF MANPOWER IN 7th GRADE LEVEL.

Year	(1) The Supply Manpower	(2) Demographic For Manpower	(3) Excess or Deficit Supply
1962	3,423	49,274	— 45,851
1963	8,016	49,274	— 57,290
1964	18,293	49,274	— 67,567
1965	4,457	49,274	— 53,731
1966	19,315	49,274	— 29,959
1967	40,396	50,088	— 9,692
1968	63,493	50,088	+ 15,033
1969	91,254	50,088	+ 42,794
1970	118,961	50,088	+ 68,873
9-year average 1962-1970	<u>34,008</u>	<u>49,636</u>	<u>— 15,628</u>
1971	144,466	50,088	+ 94,378
1972	167,992	50,088	+ 117,004
1973	190,021	50,088	+ 139,933
1974	211,142	50,088	+ 161,054
1975	231,020	50,088	+ 180,932
1976	250,025	50,088	+ 199,937
1977	268,465	50,088	+ 218,377
1978	285,951	50,088	+ 235,863
1979	302,927	50,088	+ 252,839
1980	318,933	50,088	+ 268,845
10-year average 1971-1980	<u>238,094</u>	<u>50,088</u>	<u>+ 188,006</u>

Source. (1) Calculated from Appendix Table 6 and 7.

(2) The Joint Thai-USOM Human Resources Study, p. 100.

(3) = (1) - (2)

II. Grade 7

a. Average supply and demographic demand for manpower, 1962-1970 and 1971-1980.

During 1962-1970 the supply of manpower with 7th grade education would show an average annual deficit of around 16,000 persons. This deficit would lead to the problem of underproductivity. However, the scope of this problem would decrease as compulsory education through grade 7 is more fully implemented.

During the next decade, 1971-1980 there will be an average annual surplus of 188,006 or round figures, 190,000. This condition would be a direct reflection of the extent to which compulsory education through Grade 7 had been carried out. The problem of underemployment or unemployment or both would not materialize if the surplus manpower with Grade 7 education could be utilized to satisfy the surplus demand for manpower with 4th grade education, (See Table 16.).

b. Average supply and that of economic occupational demand (1962-1970 and 1971-1980)

If the supply of manpower with 7th grade education is compared to the economic occupational demand instead of to the demographic demand, the shortage would be greater, for the average annual deficit would stand at approximately 131,494 persons per year. The economic occupational demand⁴² used in this report is based on an average of up-graded and minimum assumptions. This big manpower shortage probably would result in underproductivity.

From 1971-1980 there would be an average annual manpower surplus of about 70,000 over the economic occupational demand. This surplus is smaller than the surplus of approximately 190,000 which is obtained when the supply was compared to demographic demand up-graded to 1960 Bangkok-Dhonburi average. The 70,000 to 190,000 surplus of manpower with 7th grade education may lead to unemployment; but it is likely that a substantial proportion of this surplus will be absorbed by the surplus demand for manpower of 4th grade attainment. (See Table 17).

42. The economic occupational demand used in this case is the average demand between the up-graded and minimum estimates calculated from table 6 and 7.

TABLE 17. THE DEMAND AND SUPPLY OF MANPOWER IN 7 th GRADE LEVEL.

Year	(1) The Supply of Manpower	(2) The Average of Minimum and Up-graded Estimates of the Economic Occupational Demand for Manpower	(3) Excess or Deficit Supply
1962	3,423	165,502	- 162,079
1963	- 8,016	165,502	- 173,518
1964	- 18,293	165,502	- 183,795
1965	- 4,457	165,502	- 169,959
1966	19,315	165,502	- 146,187
1967	40,396	165,502	- 125,106
1968	63,493	165,502	- 102,009
1969	91,254	165,502	- 74,248
1970	118,961	165,502	- 46,541
9-year average 1962-1970	<u>34,008</u>	<u>165,502</u>	<u>- 131,494</u>
1971	144,466	165,502	- 21,936
1972	167,992	165,502	+ 2,490
1973	190,021	165,502	+ 24,519
1974	211,142	165,502	+ 45,640
1975	231,020	165,502	+ 65,518
1976	250,025	165,502	+ 84,523
1977	268,465	165,502	+ 102,963
1978	285,951	165,502	+ 120,449
1979	302,927	165,502	+ 137,425
1980	318,933	165,502	+ 153,431
10-year average 1971-1980	<u>238,094</u>	<u>165,502</u>	<u>+ 72,592</u>

Source : (1) Calculated from Appendix, Table 7 and 8.

(2) The Joint Thal-USOM Human Resources Study pp. 104-106.

(3) = (1) - (2).

III. GRADE 10.

It would be useful to compare supply and demand estimates of manpower with a 10 th grade of educational attainment, but demand data are lacking at this level.

IV. GRADE 12.**a. Average supply and that of demographic demand for manpower 1962-1970 and 1971-1980.**

During 1962-1970 the average annual excess supply of manpower with 12th grade education will be around 16,172 or in round figures, 16,000; This excess supply could produce unemployment or underemployment or both to the extent of about one-half of the total supply of manpower at this educational level.

TABLE 18. THE DEMAND AND SUPPLY OF MANPOWER IN 12th GRADE LEVEL.

Year	(1) The Supply of Manpower	(2) Demographic Demand for Manpower	(3) Excess or Deficit Supply
1962	—	7,328	—
1963	13,481	7,328	+ 6,153
1964	15,674	7,328	+ 8,346
1965	18,378	7,328	+ 11,050
1966	20,599	7,328	+ 13,271
1967	23,735	7,449	+ 16,286
1968	28,211	7,449	+ 20,762
1969	32,114	7,449	+ 24,165
1970	36,247	7,449	+ 28,798
8-year average 1963-1970	<u>23,555</u>	<u>7,382</u>	+ <u>16,173</u>
1971	40,134	7,449	+ 32,685
1972	43,221	7,449	+ 35,772
1973	46,142	7,449	+ 38,693
1974	49,363	7,449	+ 41,914
1975	52,969	7,449	+ 45,520
1976	56,909	7,449	+ 49,460
1977	61,080	7,449	+ 53,631
1978	65,448	7,449	+ 57,999
1979	70,007	7,449	+ 62,558
1980	74,718	7,449	+ 67,269
10-year average 1971-1980	<u>56,000</u>	<u>7,449</u>	+ <u>48,551</u>

Source: (1) Calculated from Appendix, Table 8 and 9.

(2) The Joint Thai-USOM Human Resources Study p. 100.

(3) = (1) - (2).

During 1971-1980 the excess manpower would rise to an annual average of 48,551. This amount would constitute more than four-fifths of the total supply of 56,000. If the excess supply should lead to the problem of unemployment or underemployment, this would be a serious problem for the economy.

The surplus of manpower with grade 12 educational attainment during the period 1962-1970 and 1971-1980 could seriously affect the condition of the economy. The problem might be alleviated by increasing the enrollments in colleges, universities, and advanced vocational schools (thereby decreasing the supply of 12th grade graduates entering the labor market), or by using this surplus to satisfy unmet demands for personnel in Grade 10. Since demand data have been lacking at this level, any prediction or an evaluation of this possibility can not be made (See Table 18).

b. Average supply and that of economic occupational demand for manpower (1962-1970 and 1971-1980)

During 1962-1970 the economy would be faced with the problem of a manpower shortage of grade 12 graduate of approximately 25,524 persons per year. This prediction based on economic occupational demand contrasts with the prediction using demographic demand. Economic occupational demand involves not only demographic trends, but expected shifts in the labor force among occupations; whereas demographic demand involves only expected population expansion. Thus the comparison of supply and demand using the latter demand assumption utilizes a more conservative estimate of the manpower resources required from the educational system. Which demand assumption will be most useful to employ depends on whether the economic development of the nation is thought to require a labor force structured differently than at present, or merely one which increases proportionately, without occupational shifts in the direction of skills for which higher educational attainment is requisite.

During 1971-1980 the manpower surplus at this educational level would average about 6,917 per year. It is a small amount compared to the total supply of 56,000 and it would not be a serious problem of the economy. (See Table 19).

⁴³ The economic occupational demand used in this case is the average demand between the up-graded and minimum estimates calculated from Table 6 and 7.

TABLE 19. THE DEMAND AND SUPPLY OF MANPOWER IN 12th GRADE LEVEL.

Year	(1) The Supply of Manpower	(2) The Average of Minimum and Up-graded Estimates of the Economic Occupational Demand for Manpower	(3) Excess or Deficit Supply
1962	—	49,083	—
1963	13,481	49,083	— 35,602
1964	15,674	49,083	— 33,409
1965	18,378	49,083	— 30,705
1966	20,599	49,083	— 28,484
1967	23,735	49,083	— 25,348
1968	28,211	49,083	— 20,872
1969	32,114	49,083	— 16,939
1970	36,247	49,083	— 12,846
8-year average 1963-1970	<u>23,555</u>	<u>49,083</u>	<u>— 25,528</u>
1971	40,134	49,083	— 8,949
1972	43,221	49,083	— 5,867
1973	46,142	49,083	— 2,941
1974	49,363	49,083	.280
1975	52,969	49,083	3,886
1976	56,909	49,083	7,826
1977	61,080	49,083	11,997
1978	65,448	49,083	16,365
1979	70,007	49,083	20,924
1980	74,718	49,083	25,635
10-year average 1971-1980	<u>56,000</u>	<u>49,083</u>	<u>6,917</u>

Source : (1) Calculated from Appendix, Table 8 and 9.
 (2) The Joint Thai-USOM Human Resources Study, pp. 104-105.
 (3) = (1) - (2).

CONCLUSION

Currently manpower planning is considered essential to planning for economic development. It is economically desirable that manpower resources bear a close relationship to the needs of the economy, for a surplus of manpower could lead to unemployment or underemployment or both while a supply deficit could result in underproductivity. This report considers manpower demand and supply from 1962 to 1980, a summary of which follows.

GRADE 4.

a. Supply and demographic demand for manpower (1962—1970 and 1971—1980)

1962—1970 The average excess supply is calculated to be around 40,000 persons per year. This would be a small number compared to the total supply of 478,000. The problem of unemployment would not be serious unless the concentration of the surplus were in one small area or industry.

1971—1980 The situation will be reversed. The demand excess would be about 200,000 persons annually. This would be because of the implementation of the provision in the National Scheme of Education to raise compulsory education to Grade 7. The predicted demand excess would not pose a problem if the surplus of grade 7 graduates were utilized to satisfy the demand for graduates of grade 4.

b. Supply and demographic demand up graded to 1960 Bangkok Dhonburi Average, 1962—1970 and 1970—1980:

1962—1970. The manpower deficit is expected to be approximately 80,000 persons per year.

1970—1980. The deficit would be increased to 320,000. This deficit could be compensated for by the excess supply of manpower with grade 7 attainment.

GRADE 7.

a. Supply and demographic for manpower (1962—1970 and 1971—1980)

1962—1970. A manpower shortage of about 16,000 per year is anticipated. However, this problem would cease to exist at such time as compulsory education through Grade 7 is fully implemented.

1971—1980. A supply surplus of about 190,000 per year would occur. This figure would be changed by the implementation of the provision of the National Scheme of Education for compulsory education through the 7th grade level. At any rate, this would not create a serious problem so long as this excess manpower with 7th grade education could be utilized to satisfy the excess demand for grade 4 graduates.

b. Supply and economic occupational demand (1962-1970 and 1971-1980)

1962-1970. Computation of manpower requirements under the assumption of economic occupational demand which here results in a greater discrepancy between supply and demand estimate than when demographic demand assumptions are employed. Thus the supply deficit is estimated to average around 130,000 per year during this period.

1971-1980. An average annual manpower surplus of 70,000 would occur in the economy. As stated above, the problem would not have adverse economic consequences if this surplus could satisfy the unmet demand for grade 4 graduates.

GRADE 12.

a. Supply and demographic demand, 1962-1970 and 1971-1980

1962-1970. With this demand estimate, the economy would be faced with a supply surplus of 16,000 per year.

1970-1980. The average annual excess supply of manpower with 12th-grade education would be around 49,000. This surplus of persons with a 12th grade education could amount to a serious problem in the economy, since one-half to three-fourths of the total supply of these persons may face unemployment due to lack of demand for their skills. The problem could be minimized, of course, by making available more opportunities to enter colleges, universities and higher vocational schools (thereby decreasing the supply of persons with only a 12th grade education, in effect). It may be that a substantial number of grade 12 graduates could satisfy an unmet demand for grade 10 graduates, and thus the 12th grade surplus would be absorbed. (Currently data on demand for grade 10 graduates are not available.)

b. Supply and economic occupational demand, 1963-1970 and 1971-1980.

1963-1970. The average annual manpower deficit would be around 26,000 persons.

1971-1980. There would be an average demand surplus of 7,000 per year. Probably, this lack of 12th grade graduates could not create any serious problems in the economy, since it amounts to only about one-eighth of the total supply of 56,000.

A BRIEF SUMMARY OF THAILAND'S ECONOMIC SITUATION

Thailand is considered to be an underdeveloped country according to a definition established by the United Nations. The per capita real income of Thailand is less than one-quarter of the per capita real income in the U.S. In 1961-1963 the per capita income in Thailand was around \$100-110, compared to \$2,000 in the U.S. It is quite clear that Thailand is one of the underdeveloped countries since its per capita income is only around one-twentieth that of the U.S. The term "Underdeveloped" refers only to level of economic advancement and do not pertain to the level of civilization, culture, or spiritual values.

Another approach in evaluating Thailand's current economic status is to employ the concept of stages of economic growth introduced by W.W. Rostow. Thailand has a good prospect of attaining what Rostow calls the *take-off* stage fairly soon after the completion of the currently planned irrigation projects by 1970. Then the irrigation dams will be contributing their full productive capacity to irrigation and hydroelectric power development for the benefit of both agriculture and manufacturing, respectively.

The average annual growth of per capita real income during the decade of 1952-1962 was 2%, while that for the latter half of this decade was approximately 3.2% (These figures were computed from three sources: the growth rate of the GNP, the rate of population growth, and the wholesale price index.)

Generally, the economic potential of Thailand shows good prospects for future development. The main economic problem of the economy is the backward technology which is employed in both the agricultural and manufacturing sectors. With further development of irrigation and hydroelectric capacities, modern technology can be employed to a greater extent in agriculture and manufacturing, resulting in higher domestic productivity. Moreover, the balance of trade and balance of payments would a favorable change. This is because increased exports would gain additional foreign exchange.

According to the National Economic Development Plan for 1961-1963-1966, telecommunications, transportation, hydroelectric power and public utilities will be improved and as a result the GNP is expected to rise to 77,000 million baht, approximately an 18% increase during the period 1963-1966. Thus, the annual increase of the GNP will change from 5% to 6%. The amount of gross capital formation (GCF) in relation to gross national product (GNP) which now stands at 18%, will rise to 19% in 1966.

BEST
AVAILABLE

APPENDIX

TABLE 1 a. PROJECTION I (CONSTANT FERTILITY, MODERATE MORTALITY DECLINE).

(in thousands)

Age Group	Both sexes				
	1960	1965	1970	1975	1980
Total	26,990	31,777	37,537	44,579	53,291
0 — 4	4,982	5,783	6,805	8,149	9,899
5 — 9	3,999	4,796	5,604	6,634	7,989
10 — 14	3,153	3,949	4,745	5,555	6,587
15 — 19	2,635	3,116	3,910	4,707	5,518
20 — 24	2,299	2,599	3,081	3,874	4,672
25 — 29	2,055	2,264	2,567	3,050	3,843
30 — 34	1,710	2,018	2,229	2,535	3,020
35 — 39	1,401	1,670	1,978	2,192	2,499
40 — 44	1,146	1,358	1,625	1,933	2,148
45 — 49	961	1,100	1,309	1,572	1,877
50 — 54	803	910	1,046	1,252	1,510
55 — 59	637	747	852	982	1,184
60 — 64	474	573	677	777	905
65 — 69	313	404	493	589	681
70 — 74	198	244	320	394	477
75 — 79	117	139	173	231	283
80 +	107	107	123	150	199

Source: Gille, Halvor, and Chalothorn, Thip, *The Demographic Outlook of Thailand and some Implications*, The office of National Research Council, Bangkok, Thailand, Nov. 1963, p. 24.

TABLE 1 b. PROJECTION II (FERTILITY DECLINE, MODERATE MORTALITY DECLINE).

(in thousands)

Age Group	Both sexes				
	1960	1965	1970	1975	1980
Total	26,990	31,777	37,069	43,602	48,508
0 — 4	4,982	5,783	6,337	6,628	7,061
5 — 9	3,999	4,796	5,604	6,178	6,498
10 — 14	3,153	3,949	4,745	5,555	6,133
15 — 19	2,635	3,116	3,910	4,707	5,518
20 — 24	2,299	2,599	3,081	3,874	4,672
25 — 29	2,055	2,264	2,567	3,050	3,843
30 — 34	1,710	2,018	2,229	2,535	3,020
35 — 39	1,401	1,670	1,978	2,192	2,499
40 — 44	1,146	1,358	1,625	1,933	2,148
45 — 49	961	1,100	1,309	1,572	1,877
50 — 54	803	910	1,046	1,252	1,510
55 — 59	637	747	852	985	1,184
60 — 64	474	573	677	777	905
65 — 69	313	404	493	589	681
70 — 74	198	244	320	394	477
75 — 79	117	139	173	231	283
80 +	107	107	123	150	199

Source: Gille, Halvor, and Chalothom, Thip, *The Demographic Outlook of Thailand and some Implications*, No. 6, The office of National Research Council, Bangkok, Thailand, Nov. 1963: p. 25.

TABLE 1 c. PROJECTION III (CONSTANT FERTILITY, RAPID MORTALITY DECLINE).

(in thousands)

Age group	Both sexes				
	1960	1965	1970	1975	1980
Total	26,990	31,801	37,861	45,242	54,335
0 — 4	4,982	5,784	6,968	8,353	10,136
5 — 9	3,999	4,795	5,638	6,831	8,232
10 — 14	3,153	3,953	4,757	5,602	6,796
15 — 19	2,635	3,120	3,924	4,730	5,576
20 — 24	2,299	2,601	3,093	3,898	4,707
25 — 29	2,055	2,266	2,578	3,072	3,878
30 — 34	1,710	2,021	2,241	2,555	3,051
35 — 39	1,401	1,607	1,987	2,209	2,525
40 — 44	1,146	1,358	1,631	1,947	2,173
45 — 49	961	1,101	1,317	1,586	1,900
50 — 54	803	910	1,054	1,265	1,530
55 — 59	637	749	859	999	1,204
60 — 64	474	573	684	790	923
65 — 69	313	405	499	601	698
70 — 74	198	246	325	406	493
75 — 79	117	140	178	238	301
80 +	107	109	128	160	213

Source: Gille, Halvor, and Chalothorn, Thip, *The Demographic Outlook of Thailand and Some Implications*, No. 6, The office of National Research council, Bangkok, Thailand, Nov. 1963, p. 26.

TABLE 1 d. PROJECTION IV (FERTILITY DECLINE, RAPID MORTALITY DECLINE).

(in thousands)

Age group	Both sexes				
	1960	1965	1970	1975	1980
Total	26,690	31,801	37,381	43,212	49,449
0 — 4	4,982	5,784	6,488	6,794	7,230
5 — 9	3,999	4,795	5,638	6,360	6,718
10 — 14	3,153	3,953	4,757	5,602	6,330
15 — 19	2,635	3,120	3,924	4,730	5,576
20 — 24	2,299	2,601	3,093	3,898	4,707
25 — 29	2,055	2,266	2,578	3,072	3,878
30 — 34	1,710	2,021	2,241	2,555	3,051
35 — 39	1,401	1,670	1,981	2,209	2,525
40 — 44	1,146	1,358	1,631	1,974	2,173
45 — 49	961	1,101	1,317	1,586	1,900
50 — 54	803	910	1,054	1,265	1,530
55 — 59	637	749	859	999	1,204
60 — 64	474	573	684	790	923
65 — 69	313	405	499	601	698
70 — 74	198	246	325	406	493
75 — 79	117	140	178	238	301
80 +	107	109	128	160	212

Source: Gille, Halvor, and Chalathorn, Thip, *The Demographic Outlook of Thailand and Some Implications*, No. 6, the Office of National Research Council, Bangkok, Thailand, Nov. 1963. p. 27.

TABLE 2. NATIONAL INCOME, 1951-1963.

(in millions of baht)

Industrial Origin	1951	1952	1963	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
1. Agriculture	14,139.1	12,944.0	14,017.6	12,829.6	16,568.1	16,586.1	16,485.8	16,835.6	17,774.6	20,651.7	21,357.1	22,216.3	22,153.1
2. Mining and quarrying	537.4	562.7	527.6	547.2	615.5	697.6	698.5	525.0	644.1	765.3	902.5	979.1	1,060.7
3. Manufacturing	2,900.6	3,287.8	3,714.2	3,777.8	4,647.4	4,969.7	4,810.3	5,207.4	5,529.9	5,883.0	6,500.8	7,645.2	7,942.2
4. Construction	810.4	1,174.6	1,328.2	1,344.8	1,586.0	1,731.5	1,874.3	2,200.2	2,664.6	2,945.1	3,123.3	3,500.7	3,627.5
5. Electricity and water supply	31.2	35.3	43.0	60.3	84.2	99.8	103.3	131.3	150.1	173.9	223.4	266.5	310.6
6. Transportation and communication	883.4	1,164.5	1,614.7	1,763.4	2,014.0	2,209.9	2,497.1	2,529.9	3,232.2	4,333.0	4,743.8	5,214.0	5,745.3
7. Wholesale and retail trade	5,084.6	5,695.7	5,804.3	6,187.7	7,737.3	7,986.0	8,050.8	8,167.4	8,613.0	9,802.7	10,205.5	11,355.0	11,787.8
8. Banking, insurance and real estate	100.4	168.3	266.6	346.9	547.4	580.5	672.2	760.3	1,045.5	1,293.6	1,542.0	1,662.6	1,835.0
9. Ownership of dwellings	1,048.9	1,084.1	1,114.9	1,152.0	1,191.1	1,297.4	1,327.5	1,802.5	3,072.8	3,196.6	3,295.8	3,375.2	3,482.5
10. Public administration and defense	783.7	1,319.6	1,373.4	1,597.7	1,879.7	7,278.3	2,449.3	2,523.1	2,504.0	2,699.5	2,950.6	3,006.3	3,624.8
11. Services	1,890.2	2,084.4	2,424.0	2,436.5	2,577.0	2,651.8	2,797.7	2,919.5	3,252.5	3,442.5	3,599.7	3,936.9	4,260.6
G D P at market prices	28,209.9	29,520.6	32,228.5	32,043.9	39,447.7	41,088.6	41,766.8	43,602.2	48,482.4	55,186.9	58,444.5	63,157.8	65,830.1
Plus: Net income from abroad	+ 9.9	+ 27.9	— 64.0	— 46.6	— 113.7	— 159.7	— 252.8	— 150.2	— 136.2	— 99.1	— 93.3	— 98.4	— 34.5
G N P at market prices	28,219.8	29,548.5	32,164.5	31,997.3	29,334.0	40,928.9	41,514.0	43,452.0	48,347.2	55,087.8	58,351.2	63,059.4	65,795.6
Less: Indirect Taxes	1,469.4	1,743.7	1,916.1	2,171.2	2,534.0	2,417.5	2,893.0	2,983.1	4,021.1	4,648.0	5,110.0	5,337.9	5,953.4
G N P at factor cost	26,750.4	27,804.8	30,248.4	29,826.1	36,800.0	38,511.4	38,621.0	40,468.9	44,326.1	50,439.8	53,241.2	57,721.5	59,842.2
Less: Depreciation	1,410.5	1,476.0	1,611.4	1,601.2	1,972.4	2,054.4	2,088.3	2,180.1	2,424.2	2,759.3	2,922.2	3,157.9	3,291.5
N N P at factor cost or National Income	25,339.0	26,328.8	28,637.0	28,223.9	34,827.6	36,457.0	36,532.7	38,288.8	41,901.9	47,580.5	50,319.0	54,563.6	56,550.7
P E R C A P I T A I N C O M E													
Population (in million)	20.3	20.9	21.5	22.1	22.8	23.5	24.2	24.9	25.6	26.4	27.2	28.0	28.8
Per capita G N P at market prices (baht)	1,390	1,414	1,496	1,448	1,725	1,742	1,715	1,745	1,889	2,087	2,145	2,252	2,285
Per capita N N P at factor cost (baht)	1,248	1,260	1,332	1,227	1,528	1,551	1,510	1,538	1,637	1,806	1,850	1,949	1,964
G D P at 1956 constant prices	30,848.4	32,589.1	36,447.7	36,134.9	39,924.9	41,088.6	41,233.8	42,788.8	47,438.0	53,743.0	55,915.0	58,361.4	63,046.6
Plus: Net income from abroad	+ 51.4	+ 39.1	— 73.2	— 33.6	— 103.3	— 159.7	— 259.5	— 161.3	— 138.5	— 103.4	— 111.4	— 129.7	— 118.8
G N P at 1956 constant prices	30,863.8	32,638.2	36,374.5	36,091.3	39,821.6	40,928.9	40,973.3	42,627.5	47,299.5	53,639.6	55,803.6	58,231.7	62,927.8

Source: The National Income Division, National Income Office; Office of the National Economic Development Board.

TABLE 3. INDEX OF GROSS NATIONAL PRODUCT OF THAILAND, 1951-1963.

Year	Gross National Product at Current Prices		
	Amount (million bath)	Fixed base index (1949 = 100)	Link index (previous year = 100)
1951	28,220	100.00	—
1952	29,548	104.71	104.71
1953	32,165	113.98	108.85
1954	31,997	113.38	99.84
1955	39,334	139.38	122.93
1956	40,929	145.04	104.06
1957	41,514	147.11	101.43
1958	43,452	153.98	104.67
1959	48,347	171.32	111.27
1960	55,088	195.21	113.94
1961	58,351	206.77	105.92
1962	63,059	223.45	108.07
1963	65,796	233.15	104.34

Source : The National Income Division, National Income Office, NEDB.

TABLE 3 a. WHOLESALE PRICE INDEX (1948 = 100).

Year	All Group Index
1951	104
1952	109
1953	102
1954	100
1955	117
1956	120
1957	120
1958	126
1959	118
1960	116
1961	126
1962	133

Source : Ministry of Economic Affairs, Dept. of Commercial Intelligence.

TABLE 3 b. WHOLESALE PRICE INDEX (1948 = 0).

Year	All Group Index	% increase from 1948	% increase from the previous year
1951	104	4	
1952	109	9	+ 5
1953	102	2	— 7
1954	100	0	— 2
1955	117	17	+ 17
1956	120	20	+ 3
1957	120	20	0
1958	126	26	+ 6
1959	118	18	— 8
1960	116	16	— 2
1961	126	26	+ 10
1962	133	33	+ 7

Source : Ministry of Economic Affairs, Dept. of Commercial Intelligence.

TABLE 4. TREND OF POPULATION GROWTH.

Year	Total Population	Percentage of approximate increase per year	Percentage of increase per year
1947	17,969,000		3
1948	18,508,000		3
1949	19,063,000		3
1950	19,635,000		3
1951	20,224,000		3
1952	20,831,000	2.95	3
1953	21,456,000	2.87	3
1954	22,099,000	2.89	3
1955	22,762,000	3.16	3
1956	23,445,000	3.07	3
1957	24,148,000	2.98	3
1958	24,873,000	2.98	3
1959	25,619,000	2.81	3
1960	26,388,000	3.12	3
1961	27,180,000	3.03	3
1962	27,995,000	2.94	3
1963	28,835,000	2.85	3

Remark: A three per cent annual increase on geometric progression.

Source: National Statistical Office, *Statistical Yearbook*, Office of the Prime Minister, Thailand, 1963, p. 40.

TABLE 5. PERCENTAGE OF POPULATION ECONOMICALLY ACTIVE, BY AGE GROUP AND SEX, 1960, 1970 AND 1980.

a. Urban population

	11-14	15-19	20-24	25-29	30-34	35-39	40-49	50-59	60 +
1960 Male	10.5	45.5	74.6	90.9	94.8	95.4	94.9	88.3	45.0
Female	15.0	44.7	52.3	50.1	50.4	52.6	52.3	45.4	20.7
1970 Male	8.7	37.9	74.6	90.9	94.8	95.4	94.9	73.6	37.5
Female	12.5	37.2	43.6	41.7	41.6	43.8	43.6	37.8	17.2
1980 Male	7.0	30.3	74.6	90.9	94.8	95.4	94.9	58.9	30.3
Female	10.0	29.7	34.9	33.4	32.4	35.1	34.9	30.3	13.8

b. Rural population

	11-14	15-19	20-24	25-29	30-34	35-39	40-49	50-59	60 +
1960 Male	42.9	79.6	89.5	96.6	97.8	98.0	97.9	95.2	65.6
Female	53.3	88.0	90.0	88.4	88.2	89.5	90.6	83.9	41.7
1970 Male	35.7								
Female	44.4								
	— as in 1960 —								
1980 Male	28.6								
Female	35.5								

Source: Gille, Halvor, and Chalothorn, Thip, *The Demographic Outlook of Thailand and Some Implications*, National Research Council, Nov. 1963, p. 17.

* The age group of main interest in this study.

TABLE 6. PROJECTED ENROLLMENTS IN PRATOM 1 - 4 DURING 1962 - 1980. (in thousand)

Year	Projection III				Projection IV				Projection V			
	P. 1 (Grade 1)	P. 2 (Grade 2)	P. 3 (Grade 3)	P. 4 (Grade 4)	P. 1 (Grade 1)	P. 2 (Grade 2)	P. 3 (Grade 3)	P. 4 (Grade 4)	P. 1 (Grade 1)	P. 2 (Grade 2)	P. 3 (Grade 3)	P. 4 (Grade 4)
1962	1325.8	984.0	841.8	692.3	1325.7	996	839	684	1320.6	961.5	843.4	692.3
1963	1358.5	992.8	878.0	739.6	1330.0	1001	884	751	1285.7	926.5	858.5	739.6
1964	1401.9	1014.3	890.7	772.9	1324.0	1015	897	805	1179.0	926.2	835.9	772.9
1965	1449.0	1044.6	980.8	786.3	1354.0	1003	901	828	1072.1	996.4	844.8	786.3
1966	1497.4	1079.0	934.6	802.0	1396.0	1021	893	833	1093.3	990.4	879.7	802.0
1967	1546.4	1114.9	964.6	824.2	1440.0	1051	906	826	1127.3	1010.4	902.5	824.2
1968	1595.5	1151.5	996.6	850.3	1485.0	1084	932	837	1162.5	1040.9	921.1	850.8
1969	1644.7	1188.4	1029.3	878.4	1533.0	1118	960	862	1198.0	1073.3	948.2	878.4
1970	1693.9	1225.3	1062.3	907.3	1571.0	1153	991	887	1233.3	1106.1	977.7	907.3
1971	1743.2	1262.2	1095.7	936.3	1615.4	1187.4	1021.9	915.7	1268.8	1138.8	1007.5	936.3
1972	1792.6	1299.1	1128.8	965.9	1660.6	1221.2	1052.6	944.3	1304.4	1171.7	1037.3	965.9
1973	1842.0	1336.1	1162.1	995.1	1706.1	1255.4	1082.7	972.6	1339.8	1204.7	1067.4	995.1
1974	1891.4	1373.3	1195.3	1024.6	1751.7	1290.0	1113.1	1000.5	1375.4	1237.4	1097.5	1024.6
1975	1940.8	1410.3	1228.7	1053.9	1797.3	1324.6	1143.8	1028.7	1410.8	1270.4	1127.4	1053.9
1976	1991.2	1447.5	1262.0	1083.5	1844.0	1359.2	1174.6	1057.0	1447.5	1303.1	1157.5	1083.5
1977	2042.1	1485.1	1295.5	1112.9	1891.0	1394.6	1205.3	1085.6	1484.2	1337.1	1187.3	1112.9
1978	2093.1	1523.2	1329.2	1142.5	1938.1	1430.2	1236.7	1114.0	1520.9	1371.0	1218.3	1142.5
1979	2144.2	1561.4	1363.4	1142.3	1985.2	1465.9	1268.4	1143.0	1557.6	1405.0	1249.3	1172.3
1980	2195.2	1599.8	1397.7	1202.5	2032.4	1501.7	1300.0	1172.4	1594.4	1439.0	1280.3	1202.5

Source. Weesakul, Boonseim, *Analysis and Interpretation of Educational Statistics and Enrollment Projection*, Research Division, Dept. of Educational Techniques, Ministry of Education, Bangkok, Thailand, 1968, p. 47.

TABLE 7. EXPECTED ENROLLMENT IN GRADE 5, 6, AND 7.

Year	Expansion 18 - year Program			Total
	Grade 5	Grade 6	Grade 7	
1962	135,000	120,000	113,000	368,000
1963	184,700	128,300	112,800	425,800
1964	234,400	169,900	120,600	524,900
1965	284,100	215,600	159,700	659,400
1966	333,800	261,400	202,700	797,900
1967	383,500	307,100	245,700	936,300
1968	433,200	352,800	288,700	1,074,700
1969	482,900	398,500	331,600	1,213,000
1970	532,600	444,300	374,600	1,351,500
1971	582,300	490,000	417,600	1,489,000
1972	632,000	535,700	460,600	1,628,300
1973	681,700	581,400	503,600	1,766,700
1974	731,400	627,200	546,600	1,905,100
1975	781,100	672,900	589,600	2,043,600
1976	830,800	718,600	632,500	2,181,900
1977	880,500	764,300	675,500	2,320,300
1978	930,200	810,100	718,400	2,458,700
1979	979,900	855,800	761,500	2,597,200
1980	1,029,600	901,500	804,500	2,735,600

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 205.

TABLE 8. PROJECTIONS OF STUDENT ENROLLMENT, 1962-1980.

Year	1.12% annual increase from 19%	Projection II				Projection II		
		M.S. 1 (Grade 8)	M.S. 2 (Grade 9)	M.S. 3 (Grade 10)	M.S. 1-2-3 (G.8-9-10)	M.S. 4 (Grade 11)	M.S. 5 (Grade 12)	M.S. 4-5 (G.11-12)
1962	20.21	109,577	86,754	72,685	268,016	25,268	14,840	40,108
1963	21.42	120,816	100,630	82,443	303,889	27,240	15,998	43,238
1964	22.63	138,893	111,707	95,556	346,156	31,328	18,399	49,727
1965	23.48	164,157	127,816	106,497	398,470	36,311	21,326	57,637
1966	25.05	183,385	150,426	121,555	455,366	40,469	23,768	64,237
1967	26.26	205,304	169,205	142,669	517,178	46,191	27,128	73,319
1968	27.47	225,207	189,552	161,091	575,850	54,214	31,825	86,039
1969	28.68	240,346	208,527	180,593	629,466	61,215	35,952	97,167
1970	29.89	255,639	223,492	199,019	678,150	68,625	40,304	108,929
1971	31.10	273,134	237,971	213,864	724,969	75,627	44,416	120,043
1972	32.31	292,608	254,133	227,920	774,661	81,268	47,726	128,997
1973	33.52	313,579	272,129	243,352	829,060	86,610	50,866	137,476
1974	34.73	335,658	291,600	260,511	887,769	92,474	54,310	146,784
1975	35.94	358,580	312,179	279,125	949,884	98,994	58,139	157,133
1976	37.15	382,475	333,594	298,847	1,014,920	106,068	62,294	168,362
1977	38.36	407,035	355,922	319,410	1,082,367	113,562	66,695	180,257
1978	39.57	432,449	378,914	340,842	1,152,205	121,376	71,284	192,660
1979	40.78	458,573	402,689	362,943	1,224,205	129,520	76,067	205,587
1980	41.99	485,567	427,149	385,790	1,298,506	137,918	80,999	218,917

Source: The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1968, p. 235-236.

TABLE 9. UNIVERSITY ENROLLMENT PROJECTIONS BY LINEAR TREND.

Year	Total	Natural Science and Engineering (1)	Humanity and Arts (2)	Medicine (3)	Agriculture (4)	Education (5)
1963	2,517	405	1,435	201	276	200
1964	2,725	422	1,557	226	299	221
1965	2,948	453	1,679	250	323	243
1966	3,169	484	1,801	274	346	264
1967	3,393	516	1,923	299	369	286
1968	3,614	547	2,045	323	392	307
1969	3,838	578	2,167	348	416	329
1970	4,057	609	2,289	370	439	350
1971	4,282	641	2,411	396	462	372
1972	4,505	672	2,533	421	486	393
1973	4,724	703	2,655	445	509	412
1974	4,947	735	2,777	470	532	433
1975	5,170	766	2,899	494	556	455
1976	5,385	797	3,021	518	579	470
1977	5,615	829	3,143	543	602	498
1978	5,836	860	3,265	567	625	519
1979	6,060	891	3,387	592	649	541
1980	6,281	822	3,508	616	672	562
Total	11,830	44,486	7,353	8,532	6,855	

Source: (1), (2), (3), (4) and (5): The Joint Thai-USOM Human Resources Study, *Preliminary Assessment of Education and Human Resources in Thailand*, USOM, Bangkok, 1963, p. 239.

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**8. PLANNING FOR THE NEEDS OF CHILDREN AND YOUTH
IN NATIONAL DEVELOPMENT
THAILAND
1964**

PLANNING FOR THE NEEDS OF CHILDREN AND YOUTH IN NATIONAL DEVELOPMENT

THAILAND

(1964)

I. INTRODUCTION TO THE STUDY

1. Introductory Remarks

Since Buddhism is an influential factor in the life of the Thai people, "Chatupatchai"—food, clothing, shelter, and medicine—is a term commonly used by them to refer to the basic material necessities of life. However, Buddhism also has taught the people to be aware of the less tangible factors on which the quality of life depends. Thus consideration given to the needs of children should focus not only on the basic material necessities, but also on educational, social and cultural forces which shape their lives. The "Declaration of the Rights of the Child" adopted by the General Assembly of the United Nations is in accord with the views of the Thai people on this matter.

The accelerated technological and social changes of modern times can have pronounced effects—both good and bad—on children. As people's ways of living are affected by the transition from predominantly rural and village forms of social organization toward a more urban social framework, often the family unit becomes less self-sufficient and more dependent on others to meet individuals' needs. It is in this social context that the needs less tangible—but not less significant in the long run—than "Chatupatchai" become increasingly relevant to children's well-being.

It would be relatively useless and misleading to establish priorities of the needs of children and youth in terms of large categories such as health, nutrition, and social welfare. These categories cannot properly be ranked as to importance, for they are interdependent and overlapping. All of these general areas of needs require attention and should be handled concurrently through coordinated governmental efforts. However, within each of the general categories of needs, priorities should be established so as to provide a practical plan of action; and this list of priorities should be revised from time to time as circumstances require.

Before going into the status and the needs of children and youth of Thailand, perspective as regards the country and its people is necessary.

2. Perspective

Geography

Situated in the fertile monsoon region of Southeast Asia, Thailand has an area of approximately 514,000 square kilometers, with 2,615 kilometers of coastline along the Gulf of Siam and the Indian Ocean. The nation is bordered on the north and west by Burma, on the northeast and east by Laos (where a part of the border is demarcated by the Mekhong River) and by Cambodia, and on the south by the Gulf of Siam and Malaysia.

Thailand's topographical features include a mountainous terrain in the western part of the country which extends from the North to a narrow peninsular strip in the South, elevated dry flatlands in the Northeast, and a great alluvial plain in the central part. The central plain, which is inundated during the rainy season, lies on both sides of the Chao Phya River is located Bangkok, the capital and only port city.

Thailand has a warm and damp climate. In the peninsular South, the temperature ranges between 59°F. and 89°F., but in the northern valleys—where the tempering influence of the sea is not so great—the temperature sometimes exceeds 100°F. and falls as low as 59°F. The warmest time of the year is between March and May. For most of Thailand the rainy season is between May and September, when the South-west monsoon prevails. During the rest of the year very little rain falls on central and northern Thailand. The western windward slopes of the mountains in peninsular Thailand receive as much as 3000 mm. of rainfall annually, but much of Thailand receives hardly more than 1000 mm.; while some localities get not more than 750 mm. The east side of the peninsula is sheltered from the Southwest monsoon, but receives rain when the Northeast trade winds are strong between October and January.

Population

According to the last census in 1960, the population of Thailand was approximately 26.3 millions; this accounted for a density of 51 persons per square kilometer. The average number of persons per family was 5.68. Fifty-five per cent of the population were under 19 years of age, forty-six per cent under 15 years, and twenty-seven per cent between 5 and 15 years of age. Among the population at least 25 years of age, 45.7 per cent had education between grade 1 and grade 4, while 4.4 per cent had received additional education from grade 5 to grade 10, and only 2.5 per cent had education beyond grade 10. The 1960 census reported that 71 per cent of the population over 10 years of age were literate.

There is a trend of increasing population in the urban areas, with an average of increase at 5.78 per cent per year, due to migration into the cities in addition to natural growth. The density of population in Bangkok is 1,321 persons per square kilometers in contrast to the national average figure of 51 per km. Since 1943 the average rate of increase of the general population has not been three per cent per year. The increase is due to natural

cause—more births than deaths; and higher life expectancy. At this rate, in 1980 Thailand may expect to have 48-53 million population (see projection, in Table 1.). The population under 20 years of age is expected to constitute approximately 56 per cent of the population

TABLE 1. PROJECTION OF POPULATION, 1960-1980, ASSUMING CONSTANT BIRTH RATE AND SLIGHTLY DECLINING DEATH RATE. (In thousands)

Age	1960		1965		1970		1975		1980	
	Number	%								
0 - 4	4,982	18.46	5,783	18.20	6,805	18.13	8,149	18.28	9,899	18.58
5 - 9	3,999	14.82	4,796	15.09	5,604	14.93	6,634	14.88	7,989	14.99
10 - 14	3,153	11.68	3,949	12.43	4,745	12.64	5,555	12.46	6,587	12.36
15 - 19	2,635	9.70	3,116	9.81	3,910	10.42	4,707	10.56	5,518	10.34
0 - 19	14,769	54.66	17,644	55.53	21,060	56.12	25,045	56.18	29,993	56.27
20 - 64	11,486	42.63	13,239	41.65	15,364	40.94	18,170	40.76	21,658	40.64
65 +	735	2.71	894	2.82	1,109	2.94	1,364	3.06	1,640	3.09
Total	26,990	100%	31,777	100%	37,537	100%	44,579	100%	53,291	100%
Increase	-	-	4,787	-	5,760	-	7,042	-	8,712	-

Source: *Statistical Yearbook, Thailand, 1962*, National Statistical Office, Bangkok, Thailand, 1964.

in 1980, according to the assumptions embodied in the data in Table 1. At present, the rate of birth is 45 per 1000 population per year. The life expectancy at birth (average for men and women combined) increased from 34 years in 1926 to 56 years in 1961.

Should Thailand have a population policy? This is a controversial issue. Some believe that the present rate of population growth should not be interfered with. They contend that governmental efforts to limit population growth may result in a population so small in size as to be disadvantageous, and that thus no action should be taken lest the effects be disastrous. There is also the question of moral influences on youth if the government advocated a population control policy which entailed dissemination of information about birth control methods.

Others emphasize that some kind of family planning should at least be encouraged by the Government, in order that the standard of living may be raised. It has been asserted by demographic and economic specialists that if a high rate of population growth continues, the population will be denied the improvement in health, education, and social welfare services which could be achieved through increases in total productivity. This is due to the fact that a great deal of the increased productivity would be devoted to providing basic services to the additional people. In light of this viewpoint, a population policy of some kind is the only realistic alternative to the continued existence of many unsatisfied social needs. If Thailand is to make much progress in furthering the over-all economic

development of the nation, she must be spared the burden of devoting a large portion of the annual increase in productivity to meeting minimal needs of the population increment.

The Government of Thailand holds that birth control—or family planning—may be left in the hands of the people, who should know the situation of their own family and how many children they should have. The Government feels that advice on family planning may be given, but not as a matter of national policy.

Politics.

Thailand is a constitutional monarchy. The executive power resides in the Prime Minister's Office. After a period of changes and trials in democratic government, the provisional constitution of the country is now being revised so that the executive, legislative and judicial powers may be wielded in a better and a more democratic way. The King, as chief of state and patron of all religions, exercises a strong unifying force in the Kingdom.

The Government is highly centralized. The general unit of administration is the province (changwad), which is headed by a governor appointed by the central government. There are 71 provinces, each of which is subdivided into districts (amphurs), communes (tambols), and hamlets (mubans)—the latter two units having locally elected chiefs. Municipal governments exist in urban areas.

Social conditions.

Rural living is less affected by problems of population density and social disorder than is urban life. But the people in rural areas experience disadvantages such as low productivity, inadequate water supply and sanitary waste disposal facilities, limited transportation and communication media, limited educational opportunities, lack of adequate medical attention, and malnutrition. The Buddhist temple (wat) and the school are the main social institutions in village life besides the family.

Urban communities are more diversified socially and economically than rural areas. There is a more obvious difference between the status of the rich and the poor. Such social problems as illegitimacy, child abandonment or neglect, and criminal behavior are relatively more common in urban areas.

Economics.

The annual per capita income of the Thai people is considerably lower than that in industrially advanced countries, amounting to US\$ 100-110 (2000-2200 bahts). The gross national product was 3,146.39 million dollars (62,927.8 million bahts) in 1964, and has been increasing at the average rate of five per cent annually. Gross capital formation currently is 18% of the gross national product.

The principal segment of the economy of Thailand is agricultural, which accounts for approximately 40 per cent of the G.N.P. Other important industries—listed according to the

size of their contribution to the G.N.P.—are wholesale and retail trade, manufacturing, services, communication and transportation, and construction. Thailand is now in the process of developing sources of hydroelectric power so that she may be able to use modern technology to promote development both in agriculture and in other industries.

Both domestic and foreign investment have been encouraged. As of 1964, there were 27,336 manufacturing companies in operation in Thailand. Capital investment from this sector during the period 1961-1963 amounted to 723 million bahts (US\$36.2 million);

At present only 2,500 km. of the nation's 9,000 km. of trunk highways are hard-surfaced. Most of the existing highways are clearly inadequate, rendering communication between many rural districts difficult, if not impossible—particularly during the rainy season. There is an insufficient number of feeder roads and trunk highways to permit easy access to markets for agricultural products. The provincial highway system comprises about 5,800 km., of which 3,600 km. is under construction. most of the existing provincial roads are of poor quality, being barely passable or not usable at all during the rainy season.

The nation's 3,519 km. of railroad (as of 1962) extends from Bangkok northward to Chiengmai, southward to the Malaysian border, eastward to the Cambodian border, and northeastward to Nongkhai and Ubol.

Inland water transport plays a vital role in the national economy. For example, it is estimated that 80 per cent of the rice transported within the central region is by inland waterways. In the southern region, coastal shipping handles 75 per cent of all goods transported in commerce.

TABLE 2. THE LABOR FORCE, CONSTITUTED BY PERSONS 11. YEARS OF AGE AND OVER, BY OCCUPATION AND SEX, 1960.

Occupation	Number			Percentage
	Male	Female	total	
Professions, technical, and related workers	114,941	59,019	173,950	1.3
Administrative, executive, and managerial workers	23,643	2,548	26,191	0.2
Clerical workers	113,716	20,587	134,303	1.0
Sale workers	325,254	410,203	735,457	5.3
Agricultural workers	5,574,571	5,757,918	11,332,489	82.3
Miners, quarry men, and related workers	19,347	6,908	26,255	0.2
Transport and communication workers	138,145	6,465	144,610	1.1
Craftsmen, production process workers and laborers	539,837	266,368	806,205	5.9
Service, sports, and recreation workers	152,310	121,065	273,375	2.0
Unclassified workers	84,848	14,411	99,259	0.7
Total	7,106,612	6,665,492	13,772,104	100.0

Source: *Statistical Yearbook, Thailand, 1962*, National Statistical Office, Bangkok, 1963.

Don Muang Airport in Bangkok has become an increasingly important air junction in the Far East. Thailand's domestic air transport service now covers much of the country.

The nation's telegraph system serves most of the nation; and telephone service is being extended to several provinces as well as to some foreign countries. The Government owns and operates 95 radio stations and five television stations (plus five T.V. relay stations).¹

The labor force—referred to officially as the "economically active population" which is at least 11 years of age—amounted to 13.8 million persons in 1960. As can be seen in Table 2, approximately 82 per cent of the labor force are agricultural workers. About 6 per cent of the working force are identified as craftsmen, production process workers and laborers, and slightly over 5 per cent are sales workers. Of the total, approximately four million (29 per cent) are reported to be self-employed; about 490,000 (3.6 per cent) work for the Central Government or municipalities; and about eight million (58 per cent) are unpaid family workers.

II. STATEMENT OF NEEDS

1. Health

Since the end of World War II, Thailand—with the assistance of international organizations such as UNICEF, WHO, and the United States Agency for International Development (AID)—has launched several projects to control communicable diseases and to promote the general health status of her people. The projects have yielded significant improvements, all the more impressive when viewed in the perspective of obstacles such as ignorance, poverty, and complacency—as well as limitations of communications and transportation.

Communicable disease control projects have contributed appreciably to the well-being of the Thai people, as reflected in decreased illness and greater life expectancy. Recorded deaths from malaria have decreased substantially, from 202 per 100,000 population in 1949 to 24.3 per 100,000 in 1962. The death rate due to tuberculosis has decreased from 50.7 per 100,000 population in 1952 to 31.6 per 100,000 in 1962. The BCG Anti-Tuberculosis Vaccination Program has been in operation for the last ten years, and the entire population is resurveyed for tuberculosis infection in 3-year cycles. These accomplishments are remarkable in their impact on the health of children and youth, for prior to 1962 more than half of all deaths caused by malaria occurred among persons less than 19 years of age, and 60% of Thai children under 14 years of age were infected with tuberculosis. In spite of the advances made in controlling tuberculosis and malaria, these diseases are

¹ Data from the Department of Post and Telegraph and the Department of Public Relations.

still major causes of death in the nation. There has been no outbreak of plague since 1952, and cases of smallpox are now rare. Cholera did not appear to be a problem after 1951, but then epidemics occurred in 1958 and 1959. These outbreaks, after a period of quiescence emphasize the vital need for continuing vigilance and for an active program of prevention, even in those areas of disease control where marked success has been achieved. Ill health due to venereal diseases has decreased appreciably. There are 32 venereal disease control centers located in various parts of the nation; and a national conference has been held annually since 1961 to promote cooperation in the control and prevention of these diseases. A leprosy control project has been in operation since 1955 and has yielded favorable results. As of 1962 there were 31 leprosy control centers operating in 14 provinces. Yaws and elephantiasis, which formerly were widespread, have been reduced to very low levels of incidence. In 1958 an epidemic of haemorrhagic fever occurred. Another one in 1962 affected twice as many people—most of whom were under 10 years of age. Research on the epidemiology, treatment, and control of haemorrhagic fever resulted in the mortality rate decreasing from 10% to 4.4% of those afflicted in 1958 and 1962, respectively. Disorders of the digestive system such as diarrhea, dysenteries, and intestinal parasites are still prevalent, especially in the rural areas, and so is trachoma. Some efforts have been made to combat the enteric diseases through the Rural Health Improvement Project but results have not been remarkable.

The Health Promotion Plan, carried out by the Ministry of Public Health with the cooperation of the Ministries of Education, Interior, and Agriculture, and with the support of UNICEF, WHO, and AID, has been implemented through the community development project, the maternal and child health project, the school health project, and the nutrition project. During 1960-1963 the number of villages served through the community development project increased from 334 to 3,029; the sources of uncontaminated water from 227 to 3,261; and adequate latrine facilities from 6,513 to 65,015. Concerning maternal and child health, the number of midwives who have been trained annually increased from about 160 to 200 in 1963; and 11,012 indigenous midwives were given some training in 1963. During 1957-1963 the number of first-class and second-class health centers increased from 758 to 859, and that of midwifery centers from 746 to 1,070. In 1963 there also existed 200 specialized service health units such as maternal and child health units, communicable disease control units, school health units, and sanitation units. Some of these were mobile units.

During 1960-1962 about 2,569,000 students received health examinations, of whom 129,000 received treatment; 19,000 schools were visited by doctors and nurses.

The Rural Teacher Training project, with the assistance of public health officers, provides an emphasis on serving school health and community development needs, and has extended assistance to 162 elementary schools and 434 villages, affecting 253,600 citizens.

In 1962 the 195 general and specialized hospitals provided 20,000 beds for general patients and 5,200 beds for mental patients. As of 1961 there was at least one public hospital in each of the 71 provinces.

During the 25 years from 1937-1962, the life expectancy at birth of Thai men increased from 36 years to 53 years, and that of women from 43 to 58 years. The infant death rate, the stillborn rate, and maternal deaths in childbirth decreased as shown in Table 3.

TABLE 3. HEALTH STATUS OF THE THAI PEOPLE IN 1937 AND 1961-1962.

Health Status	1937	1961-1962
Life expectancy at birth :		
Male	36 years	53 years
Female	43 years	58 years
Infant (less than one year) death rate	104.2/1,000 live births	44.7/1,000 live births
Population death rate	17.3/1,000 live births	8.0/1,000 live births
Rate of stillborn	3.8/1,000 live births	1.9/1,000 live births
Maternal death rate (in childbirth)	8.2/1,000 live births	3.7/1,000 live births

The major specific causes of death of the Thai people in 1962 were diseases of infancy (6.6% of total deaths); diseases of the digestive system (5.1%); tuberculosis of the respiratory system 4.0%, pneumonia (3.6%) malaria (3.1%); diseases of the heart (2.5%); accidents (2.4%); and complications of pregnancy, childbirth and puerperium, and also beriberi (Both less than 2%).

The training of doctors, dentists, pharmacists, nurses, midwives and other medical personnel is the responsibility of the University of Medical Sciences. This educational organization comprises ten specialized faculties, including three schools of medicine, a school of dentistry, a school of pharmacy, and other institutions. The Ministry of Public Health is also engaged in training nurses and midwives.

Data from the Ministry of Public Health for 1963 indicates a registration of 3,800 medical doctors, 355 dentists, 1,108 pharmacists, 5,467 nurse-midwives, and 716 midwives. For the period 1955-1964, the average yearly increase in the number of these health personnel was as follows: doctors—184; dentists—24; pharmacists—58; nurse-midwives—337; and midwives—69.

The number of doctors and nurses available to serve the population is much lower than the recommended international standard. The international standard recommends one doctor to 800 population and one nurse to 400 population, while Thailand has one doctor to 8,000 population, and one nurse to 3,000. In Bangkok there is one doctor for 800 population and one hospital bed for 200 population, but in the provinces there is one doctor for 25,000 population and one hospital bed for 2,400 population.

It is estimated that ten times as many doctors, nurses and other medical personnel are needed to meet the current needs of the Thai people; thus it is evident that the nation will remain deficient in this respect for a considerably long time. Although the provision of

medical services cannot be extended as rapidly as desirable because of the shortage of medical personnel, facilities, and medicines. Thailand has taken significant strides in this direction. The extent to which this achievement has been limited is in large part a reflection of the handicaps which exist, particularly the economic condition of the country.

2. Nutrition

Rice is the staple of the Thai diet, so much so that when a Thai says "eating rice", he usually implies "eating a meal". But fish is also of great importance in Thai meals. A Thai will say "Kin Kao, Kin Pia" (literally, "eat rice, eat fish") when he simply means "having a meal". In addition to rice and fish, other important foods in the Thai diet are chicken, eggs, pork, beef, and a great variety of fruits and vegetables. It is estimated that the meat sources (principally poultry, hogs, cattle, and seafoods) yield about one-third of the total protein intake of the Thai people.

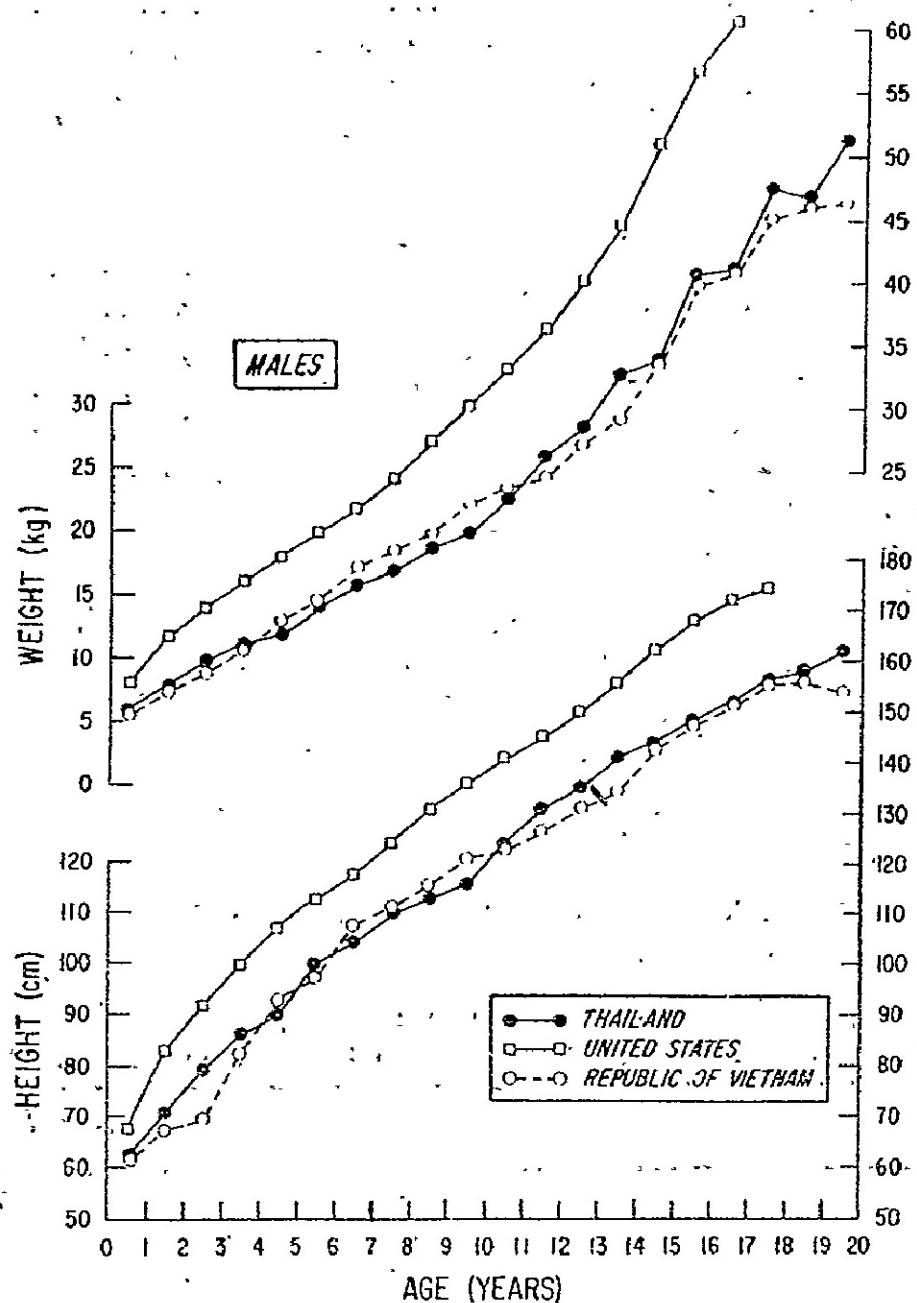
Food processing in Thailand is mostly by traditional methods—pickling, fermentation, dehydration, and salting. Canning and refrigeration are only recent developments, and the cost of canned food production is high. Just recently has it become possible to transport frozen seafoods to the North and the Northeast. But the price of these products is high—beyond the means of the majority of the people.

Generally speaking, the Thai people do not experience food shortages except in some isolated and impoverished areas. The caloric intake, mostly from rice, is about 100 calories less per day than the level recommended by the Interdepartmental Committee on Nutrition for National Defense (ICNND). Of more serious consequence, the average Thai diet is deficient in specific nutrients. (See Table 4). The consumption of fat is too low to insure good absorption of fat-soluble vitamins, especially of Vitamin A. Protein intake is also low,

TABLE 4. AVERAGE DAILY NUTRIENT INTAKES OF THAI PEOPLE AS COMPARED WITH RECOMMENDED ALLOWANCE ESTIMATED BY THE ICNND IN 1960.

Nutrients	Recommended allowance	Nutrient intakes of a Thai
Calories	1871	1770
proteins (gm)	58	47.2
Fats (gm)	—	17.3
Calcium (mg)	800	266
Iron (mg)	12	18.5
Vitamin A and Carotene (I.U.)	5000	less than 2963
Thiamine (mg)	1.0	0.42
Riboflavin (mg)	1.6	0.50
Niacin (mg)	15.0	9.80
Vitamin C (mg)	50+	26

Source: ICNND's report, 1960.



*U.S. data from State University of Iowa Child Welfare Research Station, Vietnam data from ICNND Survey, 1959

Figure 1. Average Height and Weight of Thai Children And Young Adults Compared With U.S. And Vietnamese Averages.

particularly protein from animal sources. Deficiencies of calcium, vitamin A, thiamine, and riboflavin are prevalent throughout the country—the average intake of calcium is only 266 milligrams per day; of vitamin A, less than 3,000 International Units; and of thiamine and riboflavin, 0.42 and 0.50 milligrams, respectively.

As a result of the deficiencies of specific nutrients, many undesirable and devastating consequences occur, as are described in the following paragraphs.

Iodine deficiency is an endemic condition in the North and the Northeast, and bladder stones occur in the Northeast. A substantial majority of the Thai people are infested by parasites and enteric pathogens, owing in part to improper selection and inadequate manner of preparation of foods, as well as to lack of sanitary conditions. Liver flukes and tapeworms are found in the Northeast, and roundworms in the South.

Comparison of the heights and weights of Thai children with those of American and Vietnamese children as shown in Figure 1 reveals that the Thai children are slightly heavier and taller than the Vietnamese except between the ages of 5 and 11 but are much lighter and shorter than the American children.

As a rule, Thai children and young adults have relatively good dental health, perhaps due to low consumption of sweets. Incidence of fluorosis is high in areas outside of Bangkok and Dhonburi. The percentage of decayed, missing, and filled teeth is low until after 40 years of age, when there is a sharp rise in the loss of teeth due to periodontal disease.

Pregnant and lactating women consume the same kinds of food as other members of the family; thus these women, who have a greater need for specific nutrients, are subject to a special health hazard due to dietary deficiencies. Cases of beriberi and history of beriberi were reported among these women.

The infant death rate is high, especially between one week and three months of age when more than half of the infant deaths occur. (See Table 5). In 1962 the mortality rate during the first year of life was the highest—19.7 per cent of the total deaths. Infants usually are breast-fed, and sometimes breast feeding is carried on into the second year of life. It is reported that the growth rate of Thai babies becomes retarded after the age of six months, a fact which probably is related to the nutritional status of the lactating mothers as well as to the effect of weaning. Since weaned infants in most cases do not receive a milk supplement, they consequently may lack specific nutrients—as well as adequate caloric intake—during this crucial period of rapid growth. Even though weaned infants may receive bananas and soupy mashed rice, few are fed vegetables, fish, and meat until they are old enough to join in the family meals. In this connection, infantile beriberi is not uncommonly found among infants of this age.

There is little information available concerning pre-school children. Inasmuch as they join in the family meals without milk supplement, their dietary intake is likely to be deficient in protein, calcium, and vitamins—as is the case of other members of the family. Research needs to be done for this age group.

TABLE 5. INFANT AND CHILD MORTALITY BY AGE CROUUPS.

Age groups	Percentage of total deaths during first year		Age groups	Percentage of total deaths during first five years	
	Thailand 1962	U.S.A. 1958		Thailand 1962	U.S.A. 1962
< 1 day	2.4	37.7	< 1 year	57.4	85.9
1 - 6 days	8.9	25.6	1 year	16.0	5.7
7 - 27 days	15.0	8.6	2 years	11.4	3.4
28 - 59 days	16.5	6.5	3 years	8.8	2.7
2 months	11.7	5.1	4 years	6.4	2.2
3 "	9.5	3.9			
4 "	6.7	2.9			
5 "	5.8	2.3			
6 "	5.2	1.9			
7 "	4.3	1.4			
8 "	3.7	1.2			
9 "	3.2	1.1			
10 "	2.6	0.9			
11 "	2.0	0.9			
Not stated	2.5	—			
Total %	100.0	100.0		100.0	100.0

Source: *Annual Report, 1963*, Department of Health.
Demographic Yearbook, 1963, U.N.

School children usually eat their lunches away from home, but an organized lunch program is lacking in most schools. The Rural Teacher Training Project has promoted the serving of relatively nutritious lunches to elementary school children since 1958. The 1960 annual conference of the Thailand Teachers Council proposed a resolution to the effect that school authorities should encourage provision of well-balanced meals for children for the benefit of their immediate well-being, and also as a demonstration in furthering public health education.

The Government of Thailand, with the cooperation of FAO, WHO and UNICEF, has launched a pilot project in expanded nutrition at Ubon. A second project is being considered. Iodized salt has been distributed free of charge to people in the goiter areas through the efforts of the Ministry of Health. Increases in the production of iodized salt and fish-liver oil are planned. Demonstrations in nutritional education through the use of mass communication media have been made by the Department of Health.

3. Food and Agriculture.

Thailand's economy is basically agricultural. Of the total land area of 514,000 square kilometers, 265,000 sq.km. (52%) is forest and grazing land, 109,000 sq.km. (21%) is farm land, and 140,000 sq.km. (27%) is swamps, lakes, and unclassified land. About 60 per cent of the farm land (66,000 sq.km.) is rice paddies, and the rest is upland crops area—fruit orchards, rubber plantations, and other types of farms.

About one-third of the gross national product comes from agricultural output (See Table 6), which includes rice, maize, rubber, mung beans, tapioca, oilseeds, fiber crops, forestry products, and livestock and fishery products. Agricultural production has been increasing at an average rate of six per cent annually since 1956. Rice production has been increasing at an average rate of 4.7 per cent per year (netting 8,838 million bahts in 1962), while the area planted has increased only two per cent. Thus there is an indication of increase in efficiency of rice production, a fact which should be strongly emphasized. With the growth of population at an average rate of three per cent per year, it is doubtful if rice production can continue to provide enough for domestic consumption and leave some surplus for export, as has happened in recent years. This is determined by the fact that land most suitable for rice

TABLE 6. ESTIMATED VALUE OF AGRICULTURAL, FORESTRY AND FISHERY PRODUCTION, 1956-1962.

Products	1956	1957	1958	1959	1960	1961	1962	Average rate of increase
Million Baht								
Rice	7,129.8	5,690.3	5,859.4	5,761.0	7,144.9	8,966.7	8,838.3	4.87
Upland food crops	1,022.9	1,483.8	1,673.1	2,374.9	3,160.9	3,811.5	3,893.4	25.94
Oil seeds, and coconuts	1,200.5	1,290.5	1,179.4	1,333.3	1,428.4	1,005.2	1,128.6	
Fibers	681.8	742.7	772.3	664.0	1,523.6	1,879.1	711.8	
Miscellaneous crops	630.2	758.0	818.7	876.5	1,339.2	1,335.8	1,314.6	14.39
Rubber products	1,521.5	1,455.2	1,335.7	2,136.7	2,203.3	1,786.6	1,707.8	
Forestry products	1,212.8	1,144.7	1,102.9	1,059.0	1,144.4	1,157.5	1,201.6	
Livestock and live-stock products	2,102.4	2,158.9	2,115.0	2,387.3	2,581.2	2,710.6	2,576.8	3.62
Fishery products	1,146.0	1,190.0	1,153.0	1,233.0	1,412.0	1,571.0	1,643.0	6.34
Total agricultural products	16,647.9	15,914.1	16,009.5	17,825.7	21,937.9	24,244.0	23,015.9	6.01
Gross National Product	40,928.9	41,514.0	42,210.1	46,674.2	53,014.6	57,133.2	61,441.8	

Source: *Agricultural Statistics of Thailand, 1962*, Office of the Under-secretary of State, Ministry of Agriculture, Bangkok, Thailand, 1964.

production already has been devoted to this purpose, and thus only a limited amount of arable land—having marginal value for rice farming—remains available. Furthermore, it is a government policy to keep 50 per cent of the total land for forestry; thus only a little more land can be opened up for farming purposes in general. Farm land must therefore be utilized most efficiently in order to produce enough food for the growing population.

Upland food crops, mainly maize, have come into the picture only recently, but have proven to be an excellent and steady source of income. These crops have become second in value of production (3,893 million bahts in 1962), with an 11 per cent average annual increase in output and a 26 per cent average annual increase in market value. In 1962 the value of upland food crops constituted about one-sixth of the total agricultural production, and almost one-third of this was exported.

Fruits are abundant in Thailand. Export of fruits to neighboring countries occurs, but only to a small extent due to inadequate packaging and storage facilities. The efficiency of fruit production has been increased appreciably in recent years.

Other products which yield considerable income to the nation are fiber crops, rubber, and forestry products. Although these are not food products, they are worthy of mentioning since they also constitute economic assets of the country, and thus relate indirectly to the well-being of the population. In recent years the efficiency of rubber production has been improved rather markedly—seven per cent annual increase in production as compared to 2.5 per cent annual increase in area planted. This product netted 1,707 million bahts in 1962. Fiber products contributed 1,879 million bahts in 1961; about 200,000 tons of kenaf were exported and 40,000 tons were processed domestically in 1962. The amount of forest area has been decreasing, almost to the minimum established by the Government. The amount of teak produced in 1962 was less than half of that in 1952; and other timber production also has shown a decreasing trend. The production of firewood and charcoal has remained at a fixed level since 1947.

The Government has become increasingly concerned with conservation of natural resources, and has initiated some reforestation projects. Courses in conservation of natural resources have been included in the school curriculum at various levels.

Livestock farming has never been a main occupation of the Thai people, and to date there has not been much growth in this activity. Farms remain small and non-mechanized. Frequently cattle and buffaloes are kept for labor and later to cattle traders. Swine are raised on a side-line basis rather than as a main source of income.

Dairy farming is almost nonexistent in Thailand. A large sum of money—454.2 million bahts in 1962—is spent every year on the importation of milk and milk products. The Government has encouraged dairy farming, and has engaged in experimentation with dairy farms in the northeast grazing land area.

Fishing is a good source of food for Thailand, and has drawn increasing attention from the Government as well as from the general public. Production has been increased, especially in the field of deep sea fishing. Brackish water fishery and the establishment of fish farms and fish ponds also have been encouraged by the Government. Most of the fishery products are consumed domestically, and this accounts for the relatively good health of the people near the sea coast. As a result of the mechanization of fishing boats, better inland transportation, and modern storage facilities, more sea foods now reach people in the North and the Northeast, though the cost is still high. Plans for expansion of these improvements are underway.

Since 1961, 4-H Clubs have been active in influencing the attitudes of rural youth, and in helping them to acquire skills appropriate to agricultural pursuits. Furthermore, 4-H clubs often promote a better standard of living for rural families through the experiences which youngsters receive as regards methods and practices most suitable to their particular environments.

Agricultural improvements have come through several channels. The Ministry of Interior's actions indirectly affect agricultural production through the Self-help Land Settlement Projects, Community development projects, and the services of the border police. The Ministry of Education contributes to agricultural development by offering courses in agriculture at the secondary school level. The Teacher Training Department, in particular through the Rural Teacher Training Project, introduces agricultural education into the curriculum for prospective teachers with the aims of enabling them later to use this in their teaching, and also to assist them to become leaders in agricultural communities where they may be assigned. This project was begun in Ubon in 1956 with the cooperation of UNESCO. It was later assisted by UNICEF and expanded to almost all teacher training institutions.

4. Education

Thailand established her first National Scheme of Education in 1895. It has been revised 10 times since then. The last one of B.E. 2503 (1960) emphasizes that education should aim at meeting the needs of individuals as well as those of society. The Scheme proposes to develop a citizenry with a sense of morality, culture, discipline, and responsibility, with a democratic outlook, and possessing good physical and mental health. It also calls for improvement in thinking ability, and acquisition of knowledge, techniques, and principles conducive to a useful and happy life. It advocates an educational system which is in harmony with the economic and political development of the nation. Under the provisions of this educational scheme, the school system normally consists of seven years of elementary education and five years of secondary education; and the Minister of Education is authorized to extend compulsory education to grade 7, wherever feasible.

Under this scheme, the whole educational system of Thailand can be divided into four levels—pre-elementary, elementary, secondary, and higher education.

1. Pre-elementary education. Kindergarten education is made available to a limited number of children from three to six years of age. Educational authorities realize the importance of providing education to children in this age group, but because of economic limitations the Government is able to provide only a limited number of kindergarten schools. However, the Government does have a policy of establishing at least one kindergarten school in each province to serve as a model to be followed by private organizations, and the Government assumes the responsibility of training kindergarten teachers for all schools. In 1962 more than four-fifths (83%) of all kindergarten schools were privately owned and operated,

The enrollment at the pre-elementary level constitutes only about one per cent of the total enrollment at all levels of education. The increase in enrollment each year is very small, occurring primarily in urban areas.

2. Elementary education. Before 1960, compulsory education was applicable to children under 15 years of age through grade 4. Under the new scheme of education, the elementary school consists of seven grades; and compulsory enrollment will be extended to grade 7 as local conditions permit. At present many localities have compulsory education extended to grade 7. The number of children enrolled in elementary schools comprises 16 per cent of the total population.

Classrooms become more crowded each year. In 1960 about 47 per cent of the total number of first-graders were in classrooms that contained at least 40 pupils. More than 50 per cent of classrooms in grades one through four contained at least 50 pupils; and 2.3 per cent of grade one classrooms contained at least 90 pupils. This is due partly to the repeaters, and partly to the enrollment of children of kindergarten age in elementary grades. The high rate of increase in enrollments—142,000 annually—results in a shortage of school buildings, teachers, and instructional materials.

In 1962 there were slightly over 30,000 pupils who were exempted from school under the Compulsory Education Law, 29,000 of whom were exempted due to the fact that they lived too far from any school—over 2 kilometers. It has been estimated (in 1960) that the requirement of compulsory enrollment grade 4 is effective for approximately 90% of the children registered in the school census.

Ninety per cent of the Department of Elementary Education's budget is allocated for teachers' and thus only 10 per cent is for buildings, instructional materials, and other expenditures. About one-fourth of the elementary schools are on temple grounds; some of these are greatly in need of improvement.

Three-quarters of all teachers in elementary schools are male. About 41 per cent of the teachers in elementary schools hold no teacher's certificate, of whom 7 per cent have an elementary education, 27 per cent have a secondary education, and the rest have other qualifications. Teachers holding a degree make up less than half of one per cent of the total elementary teaching force. Two per cent hold an intermediate diploma or the equivalent, and 56 per cent possess certificates lower than an intermediate diploma.

In 1962 about 32 per cent of grade one pupils were repeaters. Some causes of failure were irregularity of attendance due to transportation difficulties, moving to new localities, illness and social and emotional problems.

Only 8 or 9 per cent of grade 1 pupils who entered in 1954 and 1957 reached grade 7. The failure and drop-out rate through grade 4 has been improving gradually though slowly—from 66 per cent for the 1954 entrants to 58 per cent for the 1957 entrants—but the rate for grades 5 through 7 remained almost the same—around 19 per cent.

Thailand is faced with the problem of citizens who revert to a state of illiteracy a few years after having completed compulsory education. A recent study revealed that 4 per cent of the drafted sailors holding a grade 4 certificate were illiterate.

3. Secondary education. Before 1960, secondary education referred to grades 5 through 12, but at present it refers to grades 8 through 12. Since 1960, secondary education curriculum has become more comprehensive in scope, consisting of the academic stream and the vocational stream. Currently only a few schools are involved in a pilot project on the comprehensive program. Other schools are either academic or vocational. According to the curriculum of the secondary school in 1960 as shown in Table 7, the amount of time devoted to science courses per week is less than that of some countries; but the time allotted to other subjects is about the same.

TABLE 7. TIME ALLOTMENT PER WEEK FOR COURSES IN THE SECONDARY SCHOOL CURRICULUM, 1960.

Subject	Hours Per Week					
	Lower Level (Grades 8-9-10)		Upper Level (Grades 11-12)			
	Academic Stream	Vocational Stream	Academic Stream			Vocational Stream
			Science	Arts	General	
Thai	4	3	3	5	5	3
Foreign Language	4-6	4	6	8	6	4
Social Studies	4	2	3	5	5	3
Science	3	3	10	4	4	—
Mathematics	5	3	6	6	2	2
Professional	—	17	—	—	4-8	18,23
Miscellaneous	8-10	3	2	2	2-4	—
Total	30	35	30	30	28-34	30-35

Note: "Miscellaneous" includes physical education, health and hygiene, arts education, and practical arts.

Source: Ministry of Education, *Secondary School Curriculum, 1960*.

In 1962 the number of secondary school pupils in the academic stream was 2.33 per cent of the general population. There was an annual increase of about 30,000 in the enrollment from 1957 to 1962. It is predicted that during the next ten years the enrollment will increase by 30,000-40,000 annually. The number of enrollments in private schools and in government schools are almost equal in grades 8-9-10, but there are more in private schools than in government schools in grades 11-12. The number of pupils per classroom in private schools in grades 8-9-10 is less than that in government schools. This may be due to the fact that the cost of going to government schools is less than that of private schools. The number of pupils per classroom in private schools in grades 11-12 is more than in government schools. The qualification of teachers in private schools is much lower than that in government schools; about 90 per cent of the teachers in private schools have sub-standard qualifications.

The proportion of the school population enrolled in secondary schools in Bangkok-Dhonburi is higher than that in the provinces. More women teachers than men are teaching in secondary schools. About two-thirds of the secondary school teachers in Bangkok-Dhonburi are women, but in the provinces the majority of secondary school teachers are men. Three-fourths of the teachers in the secondary schools are inadequately qualified, of whom 60 per cent are in the provinces. The student-teacher ratio in the provinces is higher than in Bangkok-Dhonburi. There are 165 pupils to one secondary school teacher holding a degree in the provinces as compared to 97 in Bangkok-Dhonburi.

The pupils in government schools are more successful in the grade 12 examination than are those in private schools. Out of 100 grade 8 pupils, about 83 graduate from grade 10 and about 16 from grade 12. Only 10 per cent of grade 12 graduates go to colleges or universities. However, the number of those who take entrance examinations to study in institutions of higher learning increases every year (partially because of the large number of unsuccessful candidates who take the examination repeatedly). In 1962, about 20 per cent of the applicants were admitted into universities and colleges, but in 1963, only 18 per cent.

Almost 60 per cent of the Government appropriation for the Department of Secondary Education is allocated for salaries and wages, 27 per cent is for private school subsidy, and only 13 per cent is for expenditure on improvement and enlargement of government schools and for teaching materials. The 1962 Budget shows that the cost of educating secondary pupils in government schools is 893 bahts per head, and the subsidy for pupils in private schools is 317 bahts per head.

4. Vocational education. Since 1960 vocational schools have been operating in accordance with the new educational scheme. With this 7-3-3-2 plan, the vocational stream leads to a certificate from a technical institute. The program operates at three levels:

1) The program at the lower secondary level does not exceed three school years, and aims at preparing students for entry into semiskilled occupations which require a relatively high degree of natural ability and alertness. This program also provides students with some general education to permit them to continue schooling at a higher level. This level of vocational education will be eliminated when the comprehensive program is fully implemented.

2) The program at the upper secondary level immediately follows the lower secondary level; and aims at providing students with higher general and vocational education in order that they may qualify for skilled occupations in which independent judgement, higher manual skills, and responsibility are required of the worker:

3) The program at the technical level immediately follows the upper secondary level, and calls for two to three years of training. The general purposes of this level include introduction to the use of modern machines necessary for technological development in various trades and industries, and technical training in occupations for which there is a great need.

In addition, there are short-course programs aimed at the development of specific skills needed for lesser-skilled occupations, meant for those who have not been employed, and to help those already employed to progress in their occupations or to make changes to suit their interests and aptitudes. The period of training lasts from three to six months, or between 180-300 school hours.

The vocational teacher training programs produce teachers in the various specialized fields of vocational education. The program for graduates of the technical level is of one year duration, and the program for graduates of the upper secondary vocational level lasts two years.

During the period 1958-1962 the enrollment in vocational courses in general was declining. Increase was observed only in certain categories. The short-courses accounted for the most increase in enrollment, while the enrollment in technical education and in vocational teacher training increased slightly. In 1962 there were 48,140 students in vocational institutions under the Vocational Education Department, and an additional 51,009 students were in private vocational schools.

Although the percentage of repeaters and drop-outs in vocational education is less than that of the elementary and secondary schools, the educational investment per head for vocational students is higher than that for elementary and secondary students, and thus the "waste" per head through attrition is higher for the former. The average expenditure per head for agricultural students during 1961-1962 was higher than for any other vocation under the jurisdiction of the Department of Vocational Education.

A majority of the graduates of vocational institutions work for the government.

About half of the teachers in vocational schools are not adequately qualified.

In 1963 about 65 per cent of the appropriation for the Department of Vocational Education was devoted to salaries and wages; 25 per cent went to building construction, equipment and materials, and running costs; and 10 per cent was for compensation and subsidy.

5. Teachers education. In addition to institutions under the jurisdiction of the Teacher Training Department, there are other institutions which produce teachers—for example, Chulalongkorn University, Kasetsart University, and the Department of Physical and Vocational Education.

- The qualification of teachers falls into four categories:
 - 1) The Certificate of Education (Paw Kaw Saw) level admits grade 10 graduates and requires two years of schooling.
 - 2) The Diploma of Education level admits Certificate of Education (Paw Kaw Saw) graduates as well as grade 12 graduates, and is a two-year program.
 - 3) The Bachelor of Education Degree level is a regular four-year program for grade 12 graduates or Paw Kaw Saw graduates. It also admits graduates with the Diploma of Education at the third-year level of the program.
 - 4) The Master of Education Degree level admits holders of a bachelor's degree, and requires two years of course work and an acceptable thesis.

In 1962 there were 49,180 teachers without minimal teacher qualifications; this amounted to about one-third of the total teaching force. These unqualified teachers need improvement, and this also is a responsibility of the Teacher Training Department.

Plans for the training of teachers aim at producing enough teachers to meet the increasing needs, and to replace losses through death, retirement, and change of profession. The number of teachers trained still does not meet the demand. In 1964 about 73 per cent of the teachers needed will be graduated. The 27 institutions in the Teacher Training Department have been able to produce about 6,000 teachers annually, while other institutions train about 900.

During the period 1962-1964 the number of applicants for entrance to teacher training institutions at the certificate level ranged from 20,000 to 30,000, but the number of admittances ranged from only 6,000 to 7,000.

Having discussed the various levels of the educational system, it would be well at this point to study the distribution of students within the structure. This is shown in Table 8.

TABLE 8. DISTRIBUTION OF STUDENTS IN THE EDUCATIONAL STRUCTURE.

Level	Number	Percentage of total
Lower elementary, grades 1-4	3,716,969	83.6
Upper elementary, grades 5-7	373,953	8.4
Lower secondary, grades 8-10	253,124	5.7
Upper secondary, grades 11-12	65,320	1.5
University and Post graduate	36,625 919	} 0.8
Total	4,446,910	100.0

It is evident that in 1961 the vast majority of the total student population was concentrated in grades 1-4. The figures emphasize that a fourth grade education appears to be the mode for the population of Thailand. There were sizable differences between the percentage of students enrolled in the lower and the upper elementary grade levels—the latter was only 10 per cent of the former—and between the lower and the upper secondary grade levels—the latter was only one-fourth of the former. The university enrollment was less than one percent of the lower elementary grades.

5. Child Welfare.

Provision of social welfare services is a comparatively new development in Thailand. Few studies and records are available regarding these services.

1. The family. Historically, the Thai family was of the "extended" type; that is, it was composed of the father, mother, and other relatives of the spouses in addition to the immediate family and servants. It was the privilege and responsibility of a rich or successful member of the clan to take care of his relatives and their spouses. The poor people hopefully looked to their more prosperous relatives for help in the same manner as the birds fly to the banyan tree for food and shelter. But with the passage of time, ways of life have changed pretty much, especially in the urban areas, so that not so many individuals now are able to depend on family support. Thus it has become necessary for institutions other than the family to extend aid to the helpless elements of the population, especially the children.

2. Social welfare. Social welfare services in Thailand are provided by Government agencies and private charitable organizations. The Government agencies include several departments in the Ministries of Interior, Public Health, and Justice. Services provided by 170 private charitable organizations are coordinated by the Social Welfare Council of Thailand. The objectives of these services usually are to prevent as well as to remedy social problems. The services can be described as follows:

1) Services to the child and his family involve reinforcement of the family structure through counseling on marriage, family life, and child rearing; providing needy families with money, materials, and advice about work; provision of housing and means of livelihood through self-help land settlement projects; and promotion of maternal and child health through the services provided by the Ministry of Public Health, and by various municipal and private organizations. Other assistance available consists of recreation services in the form of youth centers, youth camps, youth hostels, youth clubs, athletic facilities, playgrounds, and parks. Boy scouts, Junior Red Cross, and the 4-H clubs are school activities encouraged by the Government. Services in the form of religion and moral instruction are given by schools, religious associations, and Sunday Schools. Vocational guidance services and training have been the concern of the Department of Vocational Education and the Department of Public Welfare.

2) Services to underprivileged children are rendered by Government agencies as well as by private organizations. The Foundation for the Crippled, the Foundation for the Blind (which operates two schools for the blind, one in Bangkok and one in Chiengmai), the Foundation for Retarded Children—under Royal Patronage, the Institution for the Mentally Defective, and Schools for the Deaf are providing valuable services of a specialized nature.

As of 1962, twelve schools had been established (having 69 classrooms and 77 teachers) to serve 753 underprivileged children such as the blind, the deaf, the disabled, the retarded, and the children of patients with communicable diseases.

3) Orphans and children of helpless parents receive help from infant welfare and youth centers belonging to the Government, and from some religious organizations.

In 1963 the Department of Public Welfare received an appropriation of 144 million bahts, of which 32 million bahts were allocated for services directly affecting children and youth. About 3,200 children were receiving continuous help from the Department.

4) Assistance was extended to juvenile delinquents, beggars, and convicted youths. The Central Juvenile Court has facilities in Bangkok to accommodate 300 boys and 50 girls who may be convicted and need rehabilitation. These children are given general education up to grade 4 plus vocational training. (The data for other provinces are not available.)

3. Children and work. The latest survey on employment of youths, carried out by the National Economic Development Board in 1954, showed that 79.4 per cent of youths between the ages of 15 and 19 are economically active. This survey did not include children under 14, whose employment is prohibited by the regulations of the Ministry of Interior, but who, in fact, have already joined the labor force. Exploitation of child labor is prohibited by the regulations of the Ministry of Interior governing employment, work hours; and type of work.

Though the major responsibility for vocational training rests with the Department of Vocational Education in the Ministry of Education, the Department of Public Welfare also operates a vocational training center to provide free short-course training for youths from poor families. Religious organizations also give vocational training to poor boys and girls.

4. The Children and Student's Controlling Act of 1938. This Act empowers the Ministries of Education and Interior to provide assistance for abandoned children and for children deprived of normal home life. The provisions include residential care, foster home placement, adoption, and financial aid. All these provisions are applicable to children up to the age of 17 only.

5. The Self-help Land Settlement Projects. These have been established to provide resettlement and occupational reorientation primarily for the vocationally displaced—particularly from the Bangkok-Dhonburi metropolitan area. As of 1963, of the 73,346 sq.km. of land reserved for the purpose, 15,847 sq.km. had been divided among members of the settlements, and 12,911 sq.km. of this was under cultivation. The population of the settlements amounted to 38,813 member-families (170,191 persons) living in 40 settlements

in 33 provinces. These projects contribute quite directly to the well-being of children, since often they have come from overcrowded slum areas where adequate food and recreational facilities are lacking. As each family in the project is given 25 rais (ten acres) of land (625 rais = 1 sq.km.), enough to yield more than a minimal subsistence standard of living, all members of the settlements have benefitted financially. The average annual income of a family in the settlements is 12,125 bahts.

III. EXISTING PLANS FOR CHILDREN AND YOUTH.

Thailand is now in the second half of her 6-year National Economic Development Plan (1961-1963, and 1964-1966). The plan advocates improvement and expansion in the fields of agriculture, community development, education, public health, welfare services, communication, and power. The projected spending in the Plan is shown in Table 9.

TABLE 9. TOTAL PUBLIC DEVELOPMENT SPENDING IN FISCAL YEARS 1961-1963 COMPARED WITH PROJECTED SPENDING IN FISCAL YEARS 1964-1966.

Sector	F.Y. 1961-1963 Estimated		F.Y. 1964-1966 Projected	
	Million bahts	%	Million bahts	%
Agriculture and cooperatives	1,647	14.1	2,975	14.7
Industry and mining (including commerce and services)	965	8.3	1,196	5.9
Power	2,341	20.0	1,798	8.8
Transportation and communication	3,167	27.1	7,005	34.5
Education	685	5.6	1,806	8.9
Health	390	3.3	975	4.8
Community facilities and social welfare	1,723	14.8	3,745	18.4
Unallocated	761	6.5	800	3.9
Total	11,677	100.0	20,300	100.0

Note: Numbers are rounded and do not necessarily add to totals.

Source: *The National Economic Development Plan, 1961-1966: Second Phase, 1964-1966*, National Economic Development Board, Bangkok, Thailand, 1964.

Being a document of comprehensive, nation-wide scope, the Plan has several aspects that are concerned—both directly and indirectly—with children and youth, as described in the following sections.

1. Agricultural Development Plan.

The agricultural development objectives are:

- 1) Improving production techniques so as to increase output.
- 2) Expanding agricultural exports as production increases.
- 3) Developing natural resources and utilizing them for production purposes.
- 4) Improving social conditions in rural areas so that farmers may enjoy a higher standard of living.
- 5) Promoting agricultural institutions such as cooperatives, young farmers' associations, agricultural credit, etc.
- 6) Stimulating commercial activities in agricultural products.
- 7) Assuring equitable remuneration for farmer's labor, as well as fairness in the marketing of products, in the leasing of land, and in obtaining loans.
- 8) Improving Government agencies and public enterprises that serve the agricultural population.

The Plan includes the following parts:

1. Agricultural production targets. These have been set up for 1966. For example, rice production is to be raised to 9.5 million tons, tapioca to 2.2 million tons, rubber to 0.21 million tons, etc.

2. Irrigation and flood control. During 1964-1966, the irrigation projects will cover one million rais (625 rais=1 sq. km.) of land in addition to the 10.8 million rais served in 1963. The projects include the Tapla Dam, the Phumipol Dam, the Nan River Dam, the Ta-Muang Dam, the Chaiñat Dam, and the Petchaburi Dam.

3. Agricultural crops research. Regional agricultural centers will be established to engage in research and experimental work which will be directly related to local problems. The centers also will train extension officers.

4. Agricultural extension. Service of this kind are to be expanded, including dissemination of information by radio and other means, and formation of farmers' associations.

5. Cooperatives. Efforts will be made to reorganize the cooperative system as a whole, and to educate farmers in fundamental principles of state-encouraged cooperatives. Land improvement cooperatives, cooperative credit unions, and the cooperative bank are among the features to be improved.

6. Fisheries. Both fresh-water and marine fishing will be improved and expanded. New fishery stations and research institutes will be started.

7. Livestock development. Two new dairy stations at Sakolnakorn and Tak will be developed. Livestock farming will remain essentially a mixed enterprise, i.e., partly animal farming.

8. Forestry development. Forest conservation, reforestation, and wild life conservation are among the activities to be expanded. The Forest and Timber Products Laboratory, already started, will be further improved.

9. Rubber replanting. The target for rubber replanting covers more than 2 million rai; to be completed in the next two decades. Encouragement to grow substitute crops during the transitional period will be offered. Establishment of planters' cooperatives which will grant controlled loans will be advocated to facilitate replanting. Furthermore, rubber stations at Na-born, Tung Song, and Koh-Hong will be turned in to rubber research institutes that will play a greater role in the replanting program,

10. Land development. The aim is to help each farm family to own land, and to transform subsistence agriculture into commercial agriculture. Thus, the land classification project will be continued and soil conservation projects will be expanded. Soil fertility studies also will be made.

2. Educational Development Plan.

The educational section of the Plan aims at educating citizens who will be able--among other things--to contribute to the nation's economy.

1. Elementary education :

- 1) Establishment of 200 village schools per year during 1964-1966 in areas where no schools existed before.
- 2) Establishment of the so-called "welfare" schools in remote areas at the rate of two schools per year.
- 3) Establishment of one school for the deaf in each educational region of the country.
- 4) Expansion of free compulsory education from grade 5 through grade 7 to include 200,000 fifth-graders per year.

2. Secondary education :

- 1) More lower secondary schools (grades 8-10) in the major districts, and more upper secondary schools (grades 11-12) in the major provinces will be established.
- 2) Additional regional comprehensive secondary schools will be opened on a pilot-project basis.

3. Vocational education :

- 1) Increased financial support will be given to vocational school at the secondary level, particularly in the specialties of agriculture, construction, mechanics, communication, electrical engineering, and surveying, in order to supply sufficient skilled manpower in these vocations for the labor force.
- 2) Priority will be given to obtaining adequate buildings, mechanical equipment, and

materials for vocational training institutions so that practical experiences may be an integral part of all students' training.

- 3) Agricultural School Project: Three new advanced up-to-standard agricultural schools will be opened in different regions of the country. many so-called "modern" agricultural schools offering 5-month programs to owner-operators will be started.
- 4) Technical College Project: Two new technical colleges will be established, in Udon and Tak. A new Agricultural and Mechanical College will be started at Khonkaen with a view to its becoming the University of the Northeast.
- 5) Project for Establishment of Higher Vocational and SEATO Technical Schools: Four new vocational secondary schools will be opened. Three new higher technical schools will be established by SEATO in each educational region of the country, offering courses in construction, automobile repair, metallurgy, electrical engineering, radio repairs, etc,
- 6) "Short Courses" Project: Mobile units will be sent to different parts of the country to give short courses in vocational education.
- 7) Vocational Teacher Training School Project: Two high-standard vocational teacher training schools will be built, at first, to produce 460 qualified teachers per year. Two more will be established later.

4. Teacher Training :

- 1) There will be some improvement and expansion of teacher training programs to meet the needs of teachers in elementary and secondary schools, as well as in teacher training institutions.
- 2) More certificate-holding teachers will be trained for rural areas.
- 3) The inservice training programs will be intensified.

5. University Education: Since trained personnel are urgently needed in the fields of engineering, agriculture, and medicine, the Plan includes the following projects:

- 1) Improvement of the three existing medical schools.
- 2) Expansion of the University of Chiengmai.
- 3) Establishment of a university at khonkaen with an emphasis on agriculture, engineering, and science.
- 4) Establishment of the Intitute of Developmental of Developmental Administration, offering graduate programs in public administration, business administration and applied statistics, and giving in service and preservice training programs in economic development officials.
- 5) Expansion of the Engineering Faculty of Chulalongkorn University.
- 6) Expansion of the Agricultural Faculty of Kasetsart University.
- 7) Improvement of the Science Faculty of Chulalongkorn University.
- 8) Improvement of the degree-granting teacher training institutions.

With the improvements here mentioned, 4,600, 5,000 and 5,400 additional students could be enrolled at the various universities and colleges in 1964, 1965, and 1966, respectively.

3. Public Health Development Plan

The Plan aims at expending and improving facilities for medical care, systematic control of communicable diseases, environmental sanitation, and maternal and child health services. The portion of the national budget allocated to public health services will be greater in the second phase (1964-1966) of the National Economic Development Plan than during the initial phase (1961-1963). The greatest proportional increases will be devoted to preventive measures in promoting health and sanitation, to curative measures and to research. As in the 1961-1963 period, the largest absolute amount will be spent on the control of communicable diseases.

With respect to the extension of public health services, the following developments are anticipated:

1. Provincial health centers. Seven hundred and one second-class health centers eventually will be converted to first-class ones at the rate of 10-15 centers per year; each converted center is to have 10 beds, a doctor, a sanitation officer, and a midwife. In addition, fifteen new second-class centers per year will be established in the villages.

2. Sanitation and water supply. Improvement as regards water supply and disposal of refuse and sewerage will be continued and extended to 200 more villages. A training program for local health officers also will be launched to support the project.

3. School health. Health supervision has reached children in more than 184 elementary and secondary schools in Bangkok and Dhonburi. It is planned to extend these services to schools in the rural areas through mobile units. Thirteen mobile units, each having one school health physician, two nurses and a dental-hygienist, will be added to the eight units in existence.

4. Maternal and child health. In addition to the maternal and child health centers in Bangkok, Nondhaburi, and Chiengmai, three mobile maternal and child health units are already in operation in the central, southern, and northeastern regions. It is planned to have one maternal and child health unit in each province. Furthermore, refresher courses and training programs will be organized for midwives at training centers in Bangkok, Lampang, and Khonkaen. A midwifery school at Yala is also contemplated.

5. Nutrition. The Plan includes two training centers for dietitians, one to be located at Ubol and the other at an undetermined site. Nutrition education, through demonstrations and by means of mass media, and distribution of milk and vitamin capsules will be continued. Production of iodized salt and fish liver oil will be increased.

6. Training and research. At schools of nursing, enrollment for nurses will be increased to 300, and for nurse-teachers, to 60. Training schools for nurses will be established at Songkhla and Chandaburi Hospitals. The practical nurse training school at Ubol and

Naradives Hospitals will train 150 students and ten laboratory technicians each year. The three medical colleges will produce 280-300 medical doctors annually. A National Public Health Laboratory will be established, where research on indigenous herbs, food and drug analysis, and diagnostic methods will be conducted.

4. Child Welfare Development Plan

The Plan of the Department of Public Welfare affects children through the following means: the Land Settlement Project, Community and Rural Development projects, low income housing, employment and social security benefits, public utility services, and other welfare programs.

1. Self-help Land Settlement Projects. About 6,500 families will be given land in three northeastern provinces. Road construction, farm demonstration units, land clearing equipment, schools, wells, and financial support will be aspects of aid included in the projects. Cottage industries utilizing local materials will be promoted.

The four hilltribe settlements will be improved and expanded to accommodate 1,000 more families. Livestock, seeds, additional schools, and health centers will be provided. Mobile units will also be dispatched to give help and advice. It is expected that 140,000 to 210,000 hilltribe people will benefit from the mobile units.

About 30,000 families from the Northeast will be moved to the provinces in the South.

2. Youth services. Training schools for delinquents, financial assistance and welfare facilities for orphans, and improvement of youth centers are among the features included in the program.

3. Community and rural development. It is anticipated that more than 60 per cent of the northeastern region as well as the four border provinces in the South will be served through the community development program. With respect to rural development, roads, wells, and irrigation dikes and ditches will be emphasized. The community assistance centers at Ubon and Yala will be strengthened, while a new one at Udorn will be established.

4. Public utility services. Clearance of slum areas, and establishment of housing projects for 5,000 low-income families are aims for the Bangkok-Dhonburi area. Waterworks and town planning are objectives for the rural areas. There are plans to start 19 new waterwork projects and to expand 72 existing ones. Rainwater drainage systems will also be expanded for purposes of mosquito control.

5. Transportation and Communication Development Plan

The Plan aims at development of inland water and air transportation systems. Since most of the existing highways are of poor quality; narrow, and limited to dry-season use,

the Plan proposes to renovate 6,100 kilometers of highways and to construct 720 kilometers of new roads.

Improvement is also proposed for provincial highways, and railroads; the emphasis will be on engineering surveys, administrative aspects, and efficiency.

Water transportation development includes a silt-precipitation survey at the mouth of the Chao Praya River, and dredging the navigable channels at Pattani, Kantang, Songkhla, and Puket. It also includes the final engineering survey of the Port of Sriracha.

The civil aviation network and facilities will also be expanded. International aviation will be further improved. Improvement of aeronautical communications and air-traffic control facilities, as well as of provincial airports is included in the plan.

Post and telegraph services, radio, telex, and telecommunication will all be improved and increased in efficiency. A microwave system in the central and northeastern regions, and telex services between Bangkok and Japan, and Bangkok and Manila are part of the development program.

6. Power Development Plan

The plan calls for spending 4.1 billion bahts on power development projects during the period 1961-1966. The peak demand for electricity in 1962 was 178,000 kilowatts; this peak is expected to rise to 311,000 kilowatts in 1966.

1. Hydroelectric power. The ultimate capacity of the Yanhee Project, when all eight generators are installed, will be 560,000 kilowatts. Smaller projects at Nam Pong and Nam Pung will have a capacity of 25,000 and 6,300 kilowatts, respectively, and will be completed in 1965.

2. Thermal power. The new power station at Bangkruay with a capacity of 150,000 kilowatts and the new plant using lignite at Krabi with a capacity of 40,000 kilowatts are included in the program. The Existing 12,500 kilowatt plant at Mae Moh, and the 41,300-kilowatt Wat Lieb-Samsen plant will be kept as stand-by.

3. Diesel electric power. The Diesel generating units will be moved to places where power will not be available from central sources. No new ones will be installed.

4. Distribution. Distribution of power will be modernized. The Provincial Electricity Authority will cover 36 provinces in the Yanhee area, eight provinces in the Krabi area, and eight provinces in the northeast area,

5. Surveys and investigations. Surveys and investigations will be made for further hydroelectric stations, particularly in the South, which cannot be served from Yanhee.

IV. CRITICAL SUMMARY AND RECOMMENDATIONS

The needs of children and youth have been spelled out in foregoing sections as have the obstacles to fulfillment of these needs. Guided by the vision and the principles embodied in the seven topical reports, it is possible to deduce recommendations which may be used in the solution of existing problems, as well as in planning for future development.

The recommendations offered fall under three main heading : (1) Recommendations regarding socio-economic problems ; (2) Recommendations regarding health problems; and (3) Recommendations regarding educational problems and manpower development.

1. Recommendations Regarding Socio-Economic Problems.

The socio-economic problems discussed here are concerned with:

- 1) General Economic
- 2) Population
- 3) Agriculture, Food, and Nutrition
- 4) Social Welfare

Problems affecting the general economic. A general observation of the economic condition of Thailand reveals the following points:

- 1) A low annual per capita income of approximately U.S. \$100-110 (1961-1963), representing low standard of living.
- 2) Lack of skilled labor and technical know-how.
- 3) A big deficit in the balance of trade.
- 4) Insufficient communication and transportation facilities. Specifically, this includes a need for more hard-surfaced highways, and for agricultural commodities and would promote interregional trade.
- 5) A high degree of wastage in the utilization and consumption of natural resources.
- 6) In spite of recent hydroelectric power development, this source of power continues to be too costly for widespread use.

Recommendation. It is therefore recommended that the following action be taken:

- 1) Educational planning should be geared to economic and manpower requirements.
- 2) More marketing research on foreign trade should be conducted.
- 3) A network of highways and feeder roads should be planned, to improve and supplement the existing system.
- 4) Conservation of natural resources should be exercised in a more effective manner.
- 5) Prices of electric power should be lowered to encourage its wider use.

2. Population. There is a high rate of population growth. Children currently constitute more than half of the total population, and this proportion is not expected to change appreciably in the next fifteen years. Since children are primarily consumers rather than producers, such a huge population of economically dependent persons has the effect of being a burden on the nation's economy.

Another problem which exists is the migration of relatively poor and unemployed people to the Bangkok-Dhonburi area in search of income and opportunity, leading to overcrowding and other social problems.

Recommendations. It is therefore recommended that:

- 1) Consideration should again be given to family planning, with a view to reducing the birth rate and thus the high percentage of children in the population.
- 2) Educational facilities should be improved and increased in the provinces as soon as it is feasible to do so; and efforts to promote employment prospects in the provinces should be increased, so as to reduce the excessive migration to Bangkok-Dhonburi.

3. Agriculture, food, and nutrition. Important problems observed in this field are:

- 1) Shortage of qualified personnel to serve as officials in charge of food and agriculture in the various provinces.
- 2) A serious lack of agricultural education on the part of farmers and agricultural workers in general.
- 3) Shortage of fertilizer and insecticides, even though a great amount has been imported from abroad.
- 4) Insufficient cold storage facilities, and packing industry resulting in high prices of fish and seafoods in the northern and northeastern parts of the country; and this also results in a great surplus of fruits and vegetables in some areas, with relative scarcity (and thus high prices) elsewhere.
- 5) Insufficient production of meat. The average Thai eats less meat than is good for health and growth.
- 6) Lack of milk and other dairy products for domestic consumption. Substantial amounts of these products are imported.
- 7) While consumption of fresh water fish is on the increase, there has been a decrease in the number of fish ponds. Furthermore, fewer fish for breeding purposes are being distributed.
- 8) There are people still suffering from goiter for lack of iodine, and from beriberi for lack of thiamine, and also from parasitic diseases, e.g. tapeworm and liver fluke, due to inadequate preparation of food.
- 9) Too much emphasis on only one or two crops has accounted for economic setbacks when weather or market prices are unfavorable.
- 10) Much cultivated land remains in need of irrigation.

- 11) Little is known about the nature and extent of dietary deficiencies affecting children, particularly from the time of weaning through the preschool years.

Recommendations. It is therefore recommended that the following action be considered and taken:

- 1) More agricultural officers should be trained and assigned to serve in the provinces. Furthermore, more nutritionists and home economists should be trained so as to provide adequate staffing for Rural Health Improvement and Community Development Projects.
- 2) Adult education activities in the field of agriculture, including cooperatives, should be expanded greatly to reach the majority of farmers and farm workers. Both mobile units and short courses should be employed.
- 3) Production of fertilizer and insecticides should be accelerated, and these materials should be made available at lower cost to users.
- 4) Cold storage facilities should be greatly expanded to assure sufficient domestic consumption and increased export of perishable foods.
- 5) Meat production should be increased and the cost to consumers reduced in order to expand home consumption for nutritional reasons.
- 6) More dairy farms should be established, so as to provide a better nutritional foundation for children in particular; additionally, this would encourage the domestic processing of dairy products.
- 7) Promotion of fresh water fishing should be stepped up immediately.
- 8) Educational campaigns should be conducted to promote the consumption of iodized salt and partially polished rice so as to prevent additional ill health in the form of goiter and beriberi.
- 9) More crop diversification—rather than dependence upon a single crop—should be encouraged to avoid the unfortunate consequences of sharp fluctuations in the prices of agricultural products.
- 10) An attempt should be made to extend irrigation to all areas where it is needed and is feasible in order to increase productive capacity.
- 11) Research should be accomplished with respect to the adequacy of diets of infants and children, particularly up to the age of school entrance.

4. Social welfare. Many social problems exist in Thai society—both in the rural and metropolitan areas. Prominent among them are crowded slum areas in cities, poverty and ignorance, broken homes, abandoned children and orphans, physically and mentally handicapped children, delinquency, unemployment among youth, youth with no vocational training, and inability to use leisure time well. At the present time, there are very scanty statistics available on the extent of these problems.

Recommendations. It is therefore recommended that action should be taken immediately along the following lines:

- 1) Surveys should be made to find out about the status of each problem and problem area.
- 2) Social welfare services already in existence should be coordinated and organized in their efforts.
- 3) Establishment of new social welfare organizations or centers should be fully encouraged and supported.
- 4) Special attention should be given to slum clearance, housing projects, resettlement of poor people, vocational counseling and guidance for youths and adults, vocational and citizenship training for youths and adults, and correction services for delinquents.
- 5) More professional people whose responsibility is to help solve these problems should be trained and utilized. Some of these specialists are social workers, school psychologists, psychiatrists, and guidance and counseling personnel.
- 6) Youth clubs, youth centers, and youth activities of various kinds should be promoted and increased in quantity.

2. Recommendations Regarding Health Problems.

1. Training. There is a shortage of medical doctors, nurses, midwives, and medical technicians, as reflected in the great discrepancy between the current supply of these personnel and the number required to meet recommended international standards. The shortage is most pressing in the rural areas.

Recommendation. It is recommended that many more doctors, nurse-midwives, midwives, and practical nurses be trained annually so as to provide the basis for improving the general health status of the Thai people in the shortest possible time. Furthermore, incentives must be provided to encourage doctors and nurses to serve in rural areas, where the majority of the population resides.

2. Facilities. Hospitals, medical equipment, and supplies are needed in much greater quantities than currently are available.

Recommendation. More hospitals, medical equipment, and supplies should be provided as soon as possible, consonant with the availability of medical personnel to use these facilities. Since it is in the rural areas that the lack of these facilities is most pronounced, it is there that most immediate improvements should be made.

3. Research. There is a need for better means of diagnosis and treatment, as well as for greater emphasis on preventive measures, in the field of medicine in Thailand.

Recommendation. Research activity in the fields of health and medicine—particularly as applies to causes of mortality in infancy and early childhood—should be increased and expanded in scope.

4. Public health education.

1) Maternal and child health. The majority of Thai mothers lack knowledge about child health, contributing to a high rate of infant illness and death, a situation which is highly detrimental.

Recommendation. Rectification of this condition should be accomplished through adult education activities, and through emphasis on child care in the home economic courses in schools.

2. Rural health improvement. Public health and sanitation in the rural communities is poor partly due to lack of knowledge concerning health and hygiene on the part of the villagers. Out of the 39,982 rural villages, only 3,029 have received specific assistance such as being provided with uncontaminated sources of water and sanitary latrines.

Recommendation. It is recommended that improvements be made through adult education activities, continued efforts of the Community Development Project, and regular school work with a view to building up sound health habits and attitudes.

3) School health. Schools in the Bangkok-Dhonburi metropolitan area receive some medical services from doctors, dental hygienists, and nurses, but availability of such services in the schools in rural areas is scant.

Recommendation. It is recommended that more doctors, dental hygienists, and nurses be assigned to expanded services in connection with school health programs, both in the provinces and in the Bangkok area. It is also recommended that teachers encourage students to build sound health habits while at school, and that the teachers be aided in improving their instructional methods so that health education becomes more practical and effective. The habit of eating nutritious foods like milk, meat, eggs, fat, vegetables, and fruits should be stressed. In this connection, a school lunch program providing a well-balanced meal is highly recommended.

5. Disease control. Evidence indicates that tuberculosis and malaria—major causes of death in Thailand—take a heavy toll in illness and death among children. Venereal diseases have high incidence among youths between the ages of 15 and 24. Most diseases which constitute a serious threat to the health of the general population have high incidence among infants and children.

Recommendation. It is thus recommended that control and prevention programs against diseases such as tuberculosis, malaria, venereal diseases, trachoma, intestinal and parasitic infections, and haemorrhagic fever, which are prevalent among children and youths, should be executed on a more extensive scale.

3. Recommendations Regarding Educational Problems and Manpower Development.

Main problems in the field of education have to do with:

- 1) Teachers who possess inadequate training.
- 2) Shortage of adequate school buildings, school grounds, and instructional materials— including textbooks.
- 3) Shortage of teachers.
- 4) Shortage of other trained school personnel such as nutritionists, guidance workers and school psychologists.
- 5) High degree of wastage, particularly that caused by the large percentage of retentions in first grade.

1. Pre-elementary education. As the child population is large, the need for schools or other organizations to look after children of working parents is pressing. Currently, there are just a handful of nursery schools in the urban areas, 83 per cent of which are operated by private owners.

Recommendation. It is recommended that more government or municipal nursery schools should be established, and more private ones should be encouraged.

2. Elementary education. Problems which exist at this level of education are: a large percentage of relatively unqualified teachers; overcrowded classrooms; inadequate condition of school buildings; shortage of instructional materials; and inadequate means of assessing pupil achievement.

Recommendations:

- 1) Teachers lacking qualifications should receive continuous inservice training to upgrade their qualifications.
- 2) No additional unqualified teachers should be employed.
- 3) Textbooks and other relatively expensive educational materials, as well as school lunches, should be provided to elementary school children free of charge.
- 4) The percentage of children repeating grades should be reduced. Development of better means of evaluating pupil progress should be helpful in this respect.
- 5) More money must be made available for construction of adequate school buildings, with a sufficient number of classrooms to cope with the ever-increasing size of the child population. There should not be more than 40 pupils in a classroom.
- 6) More books and reading materials in all areas of study will have to be written and produced, and each school should have a library.

- 7) Community development projects and an effective adult education program in various parts of the country would encourage the continual usage of reading skills acquired in school, so that there would be less likelihood of persons reverting to an illiterate condition.

3. Secondary education. Only 20 per cent of the students who finish grade 4 go on to the secondary schools. This is a serious problem in view of the fact that the country has an increasing need for skilled manpower which must be recruited from secondary school graduates.

About three-quarters of secondary school teachers are inadequately trained.

Recommendations :

- 1) Reasonably high qualifications for new teachers in secondary schools should be required.
- 2) Inservice training for the existing teachers with inadequate qualifications should be considered a must, and should be increasingly emphasized.
- 3) Students should have greater opportunity to obtain schooling consonant with their needs, interests, and aptitudes. A secondary school with a comprehensive program would help students to be better prepared to join the labor force. Toward this end, it is desirable that vocational training become part of the existing secondary school program.
- 4) More equipment and textbooks, as adequate school buildings, workshops, and other facilities should be provided in order to prepare capable secondary school graduates.

4. Vocational education. Problems with respect to this type of education include inadequately trained teachers and an insufficient quantity of buildings, equipment, and materials. Additionally, there is the problem of apparent low "status" which youth attach to occupations for which vocational training is requisite—which means that many young people aspire to occupational specialties more prestigious than those which require manual skills.

Recommendations :

- 1) Vocational education should be at the upper secondary school level (grades 11-12) and higher.
- 2) Attempts should be made to create more favorable attitudes toward vocational education and the occupations for which this training is offered, so that the value of acquiring these skills would not be underrated.
- 3) Vocational education at the technical level should be much improved and expanded to cope with the demand for highly-skilled personnel needed for the economic development of the country.
- 4) Much more investment must be made to secure the necessary teachers, equipment, buildings and other facilities.

5. Teacher training. Not only is there a shortage of teachers, but of school personnel trained in specialized skills such as counseling and guidance, and tests and measurement. Many instructors in teacher training institutions are themselves relatively immature and inexperienced.

Buildings, equipment, laboratories, workshops, libraries, and housing for teachers are not adequate currently.

Recommendations:

- 1) Teacher training institutions should be expanded to be able to produce 220,000 teachers between 1955 and 1980.
- 2) Teacher training institutions should aim at producing more teachers in the specialized fields for which the need is most pressing.
- 3) Instructors in teacher training institutions should be more mature and advanced in their training. An M.A. degree or equivalent should be a minimum requirement in the near future.
- 4) More money should be made available for inservice training, and further study for existing teachers, as well as for buildings, equipment, laboratories, workshops, etc.
- 5) Research in educational problem areas should be encouraged to a greater extent than at present.
- 6) Graduation of additional teachers with only the grade 12 level preparation should cease as soon as possible.
- 7) In producing primary school teachers, particularly for the rural areas, courses related to community development such as agriculture, home economics, handicrafts, and public relations should be emphasized, in addition to the usual academic and professional subjects.

Additional general recommendations:

- 1) Ways and means should be found to increase the expenditure on education from the present 2-3 per cent of the G.N.P. to 5-6 per cent.
- 2) Institutions of higher learning and research should be enlarged to be able to supply more qualified manpower for other educational establishments, as well as to serve other government needs, industry, and trade.

Assuming a population of approximately 53 million in 1980, and a moderately higher level of scholastic attainment, the projected educational enrollments in 1965 and in 1980 for levels above grade 4 are as shown in the following table. It is evident that during this period enrollments are expected to increase substantially—almost five-fold [in grades 5 through 7; greater than three-fold in the academic stream of secondary schools; double in the universities; greater than five-fold in vocational education (grades 11-13); and greater than six-fold in technical institutes. One may conclude, from the scope of the expansion foreseen, that

considerable cost will be involved, and that availability of qualified teachers may be a crucial limitation. By inference it is apparent that large numbers of persons with higher educational qualifications are expected to enter the labor force to meet the requirements of a more technologically advanced economy.

TABLE 10. PROJECTED SCHOOL ENROLLMENTS IN THOUSANDS, 1965 AND 1980, BY GRADE GROUP.

Level of Education Grade and Age Group	1965			1980		
	No. in Age group	No. in School	% in School	No. in Age Group	No. in School	% in School
Grades 5-7 (11-13)	2,373	575	24	3,947	2,762	70
Grades 8-10 (14-16)	2,051	308	15	3,543	1,055	30
Grades 11-12 (17-18)	1,212	33.4	2.8	2,166	190	8.8
University (19-22)	2,180	16.4	0.8	3,935	34.0	0.9
Vocational Education Grades 11-13 (17-19)	1,785	53.7	3.0	3,198	299.0	9.3
Technical (20-22)	1,607	10.5	0.6	2,903	69.0	2.4

Note: This table is based on a population projection by Halvor Gille and Thip Chalothorn, and assumes a slight decrease in the birth rate and in the death rate, leading to a population of 53 million in 1980. Additional assumptions embodied in these data. By 1980 the enrollments in grades 5-7 will represent 70 per cent of the appropriate age group; enrollments in the general and vocational streams of secondary schools will be approximately 25 per cent of the appropriate age group; and approximately 3 per cent of the appropriate age group will be in universities or technical institutes.

3) In order to promote manpower at the professional, opportunities should be provided for poor but capable students to further their study through college level by increasing the number and amount of scholarships.

4) Road safety. A cause of concern is the high rate of collisions involving motor vehicles which inflict injury and death on many persons. In 1962 the number of accidents was as high as 53 per 1,000 cars, and of the total number of victims, 26 per cent were children.

This problem must be attacked through several approaches concurrently: foremost in importance is a program of safety education which would extend throughout the public and private elementary schools, and which also would reach the general population through popular mass media communications; another approach is through better police training in traffic control, along with strict enforcement of regulations; to meet increasing traffic, streets should be widened, better lighted, and maintained in good condition; and lastly, motor vehicles should have to be inspected periodically to attest to their safe operating condition.

พมพกโรงเรียนพลังเดรມอาชพ
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